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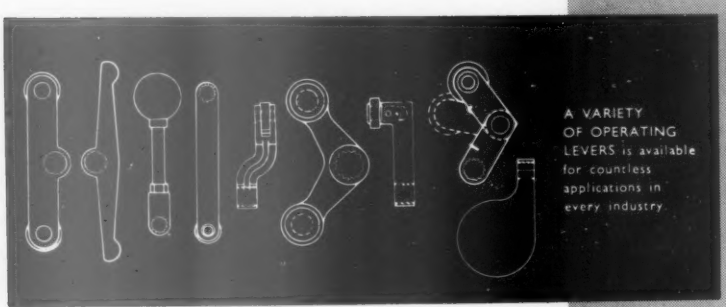

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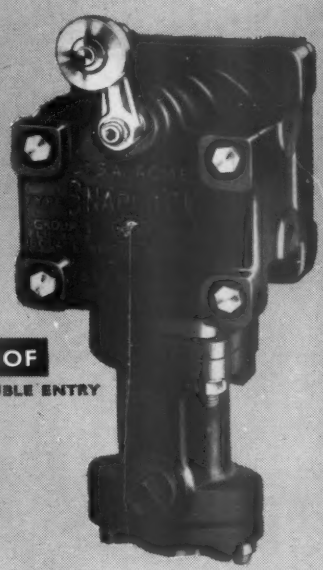

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Attracting Traffic through Diesel Services

MULTIPLE-UNIT diesel trains, fast, clean, giving the passenger a good view of the countryside, and with a reserve of power to make up for any lost time, have made an immediate appeal to the British public. Experience has shown that not only is traffic being regained by these trains from the roads, but that new traffic demands are being created. This success has been watched in many countries; South Africa and Rhodesia, for example, are considering the possibilities of similar units. The railway members of the Canadian trade mission now touring Britain are showing special interest in railcars built in this country, which are lighter and probably considerably less expensive than the cars now operating in North America. That the appeal of the diesel trains does not lessen when the novelty has worn off is shown by some recent figures. In the London Midland Region of British Railways more than 1,250,000 passengers a month are travelling by services worked by diesel lightweight trains—371,000 more than were carried on those services last year, when some of the services were still worked by steam. Even in West Cumberland, one of the first areas to be worked by diesel trains, figures for a representative month show that traffic is still increasing. On the Banbury-Buckingham line, worked since August 13, 1956, by single-unit cars, traffic for the same month rose from 2,693 in 1956 to 6,423 in 1957. The Lincoln-Grantham services of the Eastern Region were partly worked by diesel trains from June 26, 1955. In the first half of that year there were 13,397 passenger journeys. Full diesel services were introduced on September 19, 1955, and in the first half of 1956 passenger journeys rose to 16,156. In the first six months of 1957 they rose again to 22,553. In the Southern Region the diesel-electric sets on Hampshire lines have not been in service long enough to allow of an assessment of results. The Scottish and Western Region inter-city diesel trains are popular and diesels are now part of the everyday scene in the North Eastern Region. There are many lines, not yet scheduled for electrification, where diesel trains would create much traffic. It is to be hoped that their introduction will be effected as fast as circumstances permit.

Retirement of Mr. C. K. Bird

THE British Transport Commission has reluctantly agreed to the retirement of Mr. C. K. Bird, C.B.E., General Manager of the Eastern Region of British Railways, from that appointment, on grounds of ill-health. Although Mr. Bird's retirement will be regretted by his numerous friends in transport circles, it cannot come as a surprise to many, since the physical difficulties under which he has carried out his duties in a very busy Region are well known. Mr. Bird has brought to railway service an exceptionally brilliant mind. At St. John's College, Cambridge, he was a mathematical scholar and took first class honours in part I of the Mathematical Tripos, and was placed as Wrangler in part II. The ability thus demonstrated was put to good use when he later became head of the Rates & Statistics Section on the former L.N.E.R. There is no doubt of the quality of service that Mr. Bird still has to offer, provided that the burdens placed on him are not unduly heavy, and we may hope that suitable use of his ability and long experience will continue to be made. The experience of Mr. H. C. Johnson, O.B.E., Assistant General Manager, Eastern Region, who succeeds Mr. Bird, has been gained in commercial, motive power, and operating departments with particular reference to movement of goods in bulk. In view of the long-standing and increasing importance of freight traffic in the Eastern Region, his appointment would appear to be an excellent choice.

George Westinghouse

FEW names have achieved such fame in the railway industry as that of George Westinghouse. In view of this reputation, it need cause no surprise that on December 1 a bust of Westinghouse was installed among those of other great Americans in the Hall of Fame at New York University—the first name connected with the railway industry to be so honoured. What is surprising is that 43 years should have elapsed since his death in 1914 before his genius was recognised. He was born in 1846. In the 1860's, travelling between Troy and Schenectady in New York State, Westinghouse saw the results of a freight train collision which could have been prevented if adequate braking had been available. This caused him to set about designing a reliable and efficient brake; the outcome was the Westinghouse brake, which, at the age of only 23, he patented in 1869. Later it became standard in the U.S.A. and in many other countries as well. His 400 patents apply not only to railway brakes, friction draught gear, automatic signalling and interlocking switches, and all-steel coaches, but also to many other fields.

Non-Racial Staff Policy on East African Railways

THE fact that the salary structure of East African Railways & Harbours takes no account of race, but only of technical or professional knowledge and efficiency, has been emphasised by Mr. J. R. Farquharson,

General Manager of the system. He was speaking in Mombasa at the seventh annual conference of the Kenya Railway African Unions on November 22—one of his first official functions since assuming office in October. He pointed out that at September 30, 1956, 49 Africans were holding posts in Grade VII and above; one year later, there were 211. The seniority of Grade VII posts is shown by their salary range (£363-£447 a year) compared with Grade III (£794-£878) and Grade I (£1,070-£1,112). The management, he added, would continue to give equal opportunities to all members of its staff of whatever race, at all levels. As to training, the number of visits abroad must of necessity be restricted because of the considerable cost involved. A revised bursary scheme was introduced last year under which the E.A.R. & H. administration met the whole cost of sending suitable qualified men to a university overseas. Of the four men who have come to Britain this year, one is an African, one an Asian, and two are Europeans. It is quite clear from this that the policy of equality in opportunity is being, and will be, implemented without favour to any person or group.

Overseas Railway Traffics

RAILWAY receipts of South African Railways & Harbours in the week ended August 31, 1957, were £2,784,694 compared with £2,725,646 in the corresponding week of 1956. In general, receipts were higher in the following weeks than in 1956; the average for the 11 weeks ended November 9, was £2,848,484 against £2,448,773 last year. The aggregate receipts from April 1, to November 9, were £89,196,982 against £85,546,918 for the same period of 1956. Aggregate receipts from harbours for the same period rose sharply from £3,700,703 to £5,181,380, and airways revenue rose from £4,564,218 to £5,219,706. Railway operating revenues of the International Railways of Central America for October amounted to $1,245,826, a decrease of $159,127 compared with October, 1956. The aggregate net revenue from railway operations for the period January 1-October 31, was $1,786,447 ($2,232,432). A dividend of $1·25 on the cumulative preferred stock was declared payable on November 15, 1957, to stockholders on record at November 6, 1957.

Diesel Cars for Official Tours

SIR BRIAN ROBERTSON, Chairman of the British Transport Commission, and his hosts of the London Midland Region struck a welcome note of modernism by using one of the lightweight multiple-unit diesel sets for a large portion of their recent official visit to North Wales, Crewe, and Manchester. The use of diesel cars for inspection purposes is, of course, no novelty in some overseas countries; and now that large numbers of the standard British Railways two-car sets are available here, the adoption of one or two of them for this important purpose when required has obvious advantages. The diesel car affords a better all-round view than the orthodox saloon hauled by a steam locomotive; avoids the occasional necessity of propelling; is readily reversible; is normally operated by driver and guard only; and—perhaps most important of all—should have an important psychological effect on railway staff in the areas visited.

Fast Construction in Canada

THE opening of the Canadian National Railways Heath Steele line in northern New Brunswick may well create a record for fast railway construction. The Minister of Transport introduced a Bill in the Canadian House of Commons to authorise the construction of the line in April, 1956; in August of that year the C.N.R. called for tenders; on October 1, 1956, the contractors started preliminary work; in April, 1957, preparations started for track laying; and six months later the line was completed. The Bartibog-Heath Steele line is 23 miles long, and crosses terrain varied in the extreme. Swamps, heavily forested flats, deep gullies, and broken rocky countryside, all are encountered in this comparatively short distance. The construction of this line is not an isolated example of speedy work. In September, 1956, it was announced by the C.N.R. that the route had been surveyed for a 30-mile spur from the Hudson Bay line north of Thicket Portage into the Mystery-Moak Lakes area of Northern Manitoba. Construction was carried out during the winter, and the line was completed recently, less than 12 months after work started.

Tracklaying Methods

EXTENSIVE use of heavy equipment by the contractor was characteristic of construction of the Bartibog-Heath Steele line. A self-propelled mobile rock drill was used to drill 6-in. holes for blasting in the rock cuts, and many units of heavy earth-moving machinery were put in operation at both ends of the line. The C.N.R. engineers devised a novel method of track laying, as the accepted method was considered too ponderous and expensive on a line of this length. A self-propelled hoist, hauling two flat wagons containing lengths of rail and rail fastenings, began laying rails on the sleepers which had already been positioned. The rails were held in place by bridles; this allowed the hoist to move along on the tracks it had just created, its wheels forcing the rails outwards against the bridles to the exact gauge. The rail was then spiked to the sleepers. As these already had been distributed along the right of way, this method proved extremely fast. In this way the C.N.R. crews could carry out other necessary work, such as final ballasting, installation of telegraph lines, and completion of drainage ditches, while the rails were being laid.

Subsidy for Irish Republic Railways

THE announcement in the Dail last week by the Minister of Industry & Commerce in the Republic of Ireland, Mr. Sean Lemass, that his Government will no longer make up the increasing losses on the railways, but accord Coras Iompair Eireann an annual subsidy over a period of five years, is not surprising. As he rightly pointed out, no further increases in railway charges can be made without even further loss of revenue. He suggested that trade union leaders should give consideration to the estimate of the C.I.E. management that 30 per cent were surplus, and that it would be in the interests of railwaymen for the unions to review their attitude, as to redundancy, of "last in, first out." It is interesting to hear that the total capacity of C.I.E. rolling stock is fully used at some period every year, and that widespread closing of branches would make little difference to the financial situation. If the agreement with the Government of Northern Ireland on the Great Northern Railway is terminated—at the wish, it is understood, of the Northern authorities, it is intended to amalgamate G.N.R. lines in the Republic with C.I.E. The proposals mentioned are to be incorporated in a Bill to be introduced next year. The financial state of Coras Iompair Eireann is serious. The loss for 1956-57 was £1,723,000, and that for the current year is expected to be £2,000,000. It is encouraging, however, that the Government admits that the railways are a vital necessity, as the most economic form of transport.

Double-Deck Coaches

WHEN the railways of the U.S.A. first began to build double-deck coaches for main-line use, the purpose of their upper decks or "domes" was to enable passengers over highly scenic routes, especially those through the Rockies, to obtain more extensive views, over the top of the trains, than they could previously from coach floor level. In the dome coaches passengers have their booked seats or sleeping rooms at floor level, and mount to the dome seats from time to time during the journey; in effect, therefore, the second deck provides no additional accommodation throughout, but merely a diversion for passengers. The latest double-deck developments, however, are planned to reduce train weights by making the

fullest possible use of the two levels, which extend from end to end of each car. On the Santa Fe "El Capitan" trains, for example, the entire seating of each car is on the upper level, the lower being used for lavatories, baggage space, accommodation for air-conditioning plants, and, in the restaurant car, for the kitchen and pantry. The Chicago & North Western Railway now has on order double-deck stock in which the additional seating will be in galleries on either side of the central aisle, which will be open up to the car roof, thus providing more airy conditions—a development of the Burlington gallery-type double-deck suburban coaches.

Pipes Laid under Main Line with Cross Auger

THE Western Region administration of British Railways reports favourably on the use of the cross-auger type of boring machine for forcing pipe drains through railway embankments under traffic where open trenching or a heading are impracticable. Recently two 30-in. sewer pipes were successfully laid under the London-Birmingham main line at Banbury by this means. The pipe crossings were 92 ft. and 105 ft. long respectively and their inverts 8 ft. 4 in. and 9 ft. 3 in. below rail level. The work was carried out with between-trains occupations and under a 40-mile speed restriction, though in future with this restriction occupation may be unnecessary. In the first case the pipe was 1 ft. out of line horizontally and 6 in. vertically, the bank being of sandy clay; at the second site, where it was of very wet clay, the figures were 2 ft. horizontally and 10 in. vertically. The machine used consisted of an auger with cutting head 1 in. less in dia. than that of the pipe in which it worked, and with a power unit mounted on a sled clamped to the pipe. A winch on the sled hauls the machine and pipe forward by means of a cable run to a dead-man anchor.

Record Engine Mileages in Rhodesia

THE Rhodesia Railways frequently give indications of efficiency in various fields. Four different "15th" class Beyer-Garratt locomotives recently achieved monthly mileages of 8,395, 8,429, 9,843, and 10,145. The mileages of 9,843 and 8,395 were achieved on the Bulawayo-Malvernia (Lourenço Marques) run soon after these engines had been released from the shops after general repairs. The record mileage of 10,145 was achieved on the Salisbury-Gwelo section and was the result of special linking arrangements and attention to this particular locomotive. The "15th" class are 4-6-4 + 4-6-4 Garratts with a tractive effort of 47,496 lb. at 85 per cent boiler working pressure, 4-ft. 9-in. driving wheels, and total weight in running order of 187 tons. Whilst the best of the feats recorded was admittedly a special effort, it is likely that good performances of this kind will be multiplied, as special efforts are being made by the Rhodesia Railways to improve locomotive performance. The "15th" class has shown itself particularly suited to operation on the Rhodesia Railways.

The Last Rhymney Locomotive

ANNOUNCEMENT by the Western Region that the 0-6-2 tank locomotives Nos. 36 and 38 have been condemned means that the locomotive stock of yet another of the pre-grouping railways has become extinct; for these were the last engines of the former Rhymney Railway to remain in British Railways service. That this company before its amalgamation with the G.W.R. in 1922 owned 123 locomotives for little more than 50 route miles of line is a reminder of the density of traffic on the once highly prosperous independent railways serving the South Wales and Monmouthshire industrial area. When built as R.R. Nos. 40 and 42 in 1921, the two locomotives now withdrawn were among the best examples of the 0-6-2T wheel arrangement in this area; there it was so popular and successful that of 767 locomotives acquired by the G.W.R. from the South Wales companies, nearly 450 were of this arrangement.

Traffic Organisation at B.T.C. Headquarters

THE Chief Commercial Officer, British Railways Central Staff, British Transport Commission, Mr. J. R. Pike, retired on November 30, as recorded in last week's issue. Now Mr. R. F. Harvey, Chief Operating & Motive Power Officer in the same headquarters, has decided to retire for health reasons early in the New Year, as mentioned in our personal columns. The Commission is taking the opportunity to merge the functions of the Chief Commercial and Chief Operating & Motive Power Officers into the single appointment of Chief Traffic Officer. Mr. Frank Grundy, Chief Traffic Manager of the North Eastern Region, has been appointed to the new post. This change is in accordance generally with those already made in recent months in three Regions of British Railways.

The traffic organisations of the Eastern, London Midland, and North Eastern Region were created with a view to readier winning of traffic and more efficient handling of it. Whilst differing materially from each other, they are alike in embodying the principle of vesting in one officer responsibility for commercial, operating, and motive power activities which previously were directed, at Regional level, by officers responsible to the General Manager. In some districts with smaller volumes of traffic, however, the usual practice was followed of appointing a single officer to direct both commercial and operating matters. The officer at Regional headquarters in charge of the three activities is known in the Eastern Region as Assistant General Manager (Traffic), in the London Midland as Director of Traffic Services, and in the North Eastern Region as Chief Traffic Manager. Below headquarter level the organisations differ even more, as is clear in the details given in previous issues of this journal. These differences are the result largely of the ideas of Regional managements on how the principle of a combined traffic organisation should be applied, and of geographical considerations peculiar to Regions. The basic idea of grouping commercial, operating, and motive power activities is the same.

As regards manpower, it is doubtful whether the change in British Railways Central Staff means more than replacing two (at one time three) officers by one. Nevertheless, despite the decentralisation of work to the Regions, the impact of the modernisation plan has brought many problems which call for work at headquarter level which cannot be delegated to Regions. The application of the charges scheme necessitates much action in the commercial sphere. Mr. Grundy's background is commercial, mainly in connection with freight. In view of his pioneer work in devising and bringing into force, earlier this year, the traffic organisation of the North Eastern Region, no better appointment could have been made.

There are no territorial alterations—or the disturbance they entail—to bedevil the latest change at 222, Marylebone Road. If, as we believe, the change involves simply a reduction in officer posts, it is to be welcomed as streamlining action to increase the prosperity and efficiency of British Railways.

Railway Administration in the U.S.S.R.

THE railway administration of the U.S.S.R., a party of whose senior officers are at present on a tour of British Railways, participated in the comprehensive decentralisation of industry which was decreed earlier this year. Previously administration was centralised in Moscow at the Ministry of Railways, to which the railway departments in the 15 republics of the Union were directly responsible. After the establishment of the new economic organisation, Sovnorkoz, with its regional councils in the republics, centralisation ended and the railway departments ceased to be required to refer everything to Moscow, but deal instead with the local Sovnorkoz. The latter takes the form of an economic council on which the representatives of the different industries sit. Any disputes between the railway departments and the economic council, if not

settled by consultation, are referred to the Council of Ministers in Moscow, and the Minister resolves the conflict and instructs the railway department accordingly. In practice, however, differences are generally ironed out locally and reference to Moscow is now rare.

Decentralisation, it is claimed, has brought many benefits. It has enabled the expert administrative staff previously concentrated in Moscow to be dispersed to the regions, with a marked improvement in the quality of staff at work on the spot. This has resulted in a considerable saving of staff and less paper work. Increased regional responsibility vested in higher qualified staff has led to the better planning and co-ordination of transport, more particularly in the movement of goods between regions. Industry has benefited as local conditions and requirements, being known, are better catered for. Furthermore, co-ordination between the several forms of transport is facilitated. Planning responsibility still rests with the central planning authority, Gosplan; but plans originate in the regions and are co-ordinated and finalised in Moscow. Once they are promulgated, there is every incentive to fulfil them, for under the Soviet industrial system any surplus above that planned for is shared by the industry itself and the organs of government.

The result is that the Russian railways are in an almost unique and envious state of solvency and make a generous contribution to the national budget. The conditions in which they operate cannot be compared to those prevailing in Britain, as the officials on tour doubtless have quickly realised. Distances in Russia are so great, industrial production is rising so steeply, and roads generally are so poor that traffic gravitates naturally to the railways.

Modernisation consequently is as essential there, as in Britain, though for somewhat different reasons; and it is taking the same course. The aim is to replace all steam locomotives with diesel and electric and electrification of a further 5,000 miles of line is planned by 1960. First priority is being given to lines where density of goods is greatest, that is to say, where heavy industry is concentrated. The second priority is to electrify the suburban lines in the densely populated industrial areas. Track improvement is proceeding with the laying of heavier rails and ballast and the introduction of long rail welding. Heavier rolling stock is being brought into service, far heavier on the Russian 5-ft. gauge than would be possible on standard-gauge tracks here; exceptionally, some six-axle 95-ton wagons are in use. Continuous braking is already universal on all but minor lines, as are automatic couplings. Marshalling yards are being mechanised and automation introduced. Freight has clear priority over passenger as regards capital investment, but passenger vehicles of all-metal construction are replacing wooden ones still in use. The standards of passenger comfort are still far below those on British Railways.

Universal Beams

THE Institution of Structural Engineers met recently under the chairmanship of Professor Sir Alfred Pugeley, its President, to receive a paper entitled "Universal Beams and their Application" presented by Messrs. S. Barlow and G. Foster. Introducing the subject, Mr. E. T. Judge, Director of Civil Engineering, Dorman Long & Co. Ltd., emphasised the vital importance of the British structural engineer being highly competitive in world markets. To meet the challenge from abroad his firm had designed and almost completed a new universal beam rolling mill at Lackenby Steelworks to produce a wide range of efficient beams and column sections. When in production early next year new steel sections giving greater strength for less weight will be available to industry, and they will also permit of appreciable reductions in fabrication costs. The new mill, costing some £18,000,000, and the production of universal beams together represent the climax of the firm's £60,000,000 development scheme.

The authors of the paper describe the new mill as the first of its kind in this country and the most advanced of its type in the world. Universal beams are 10 per cent more efficient than B.S. beams, and a large variety of beam sizes of greater weights and strengths than any now produced in the United Kingdom will be available. To manufacture this new wide range of beam and column sizes the initial supply of rolls alone cost £1,000,000.

The mill will be the first of the four-roll technique in this country, the four rolls being in the same vertical plane. The universal beam is therefore shaped by direct rolling pressure, and the faults inherent in indirect shaping are largely avoided. The paper proceeds to describe the mill in detail and to explain why smaller flange taper is available. In general, the universal beam will have wider flanges than the B.S. type, but in those with moderate flange-widths the rolling technique enables more weight to be concentrated in the flanges to give larger carrying capacity. The new beams will be rolled with square instead of rounded toes, thereby tending to reduce structural shop preparation for welding purposes.

Universal beams up to 36 in. deep also have great advantages over plate girders in strength-weight ratio, permissible stresses, and economy in fabrication. Furthermore, this type of beam can be split horizontally along the centre-line of the web to form two separate T-bars, between which any reasonably-deep web-plate can be automatically welded without risk of the machine fouling the flanges. Moreover, one beam split into two Ts can be used to form the upper and lower booms of a truss or lattice girder without the necessity for gusset plates for attaching the diagonal and vertical members. Long-stalk Ts can be used as rafters.

Wide-flange universal sections are also specially suitable as columns. Their variety of web and flange thicknesses for core columns—up to 14 in. × 16 in. × 320 lb. per ft.—with outer plates or slabs welded or riveted to them, provides an exceptionally strong form of support.

The advantages of the universal beam in bridgework is also stressed in the paper, the section of a typical through-span railway bridge being illustrated to show the many uses of this new range of structural shapes and sizes. It is also particularly suitable for columns and girders carrying overhead conductor wires, for crane and signal gantries and many other uses. In all cases economies in fabrication are notable, and the new process should assure an indigenous supply of more efficient and economical R.S. sections to British structural engineering.

Passenger Transport in Greater New York

THE Greater New York area already has a population of about 15,000,000, and a recent report by the Regional Plan Association upon the population trends and expansion in the area, estimates that by 1975 the figure will have risen to 19,000,000. It is also expected that by then at least 700 sq. miles of additional land will have to be urbanised, mainly in New Jersey State west of the Hudson River. This may perhaps be more apparent from the map on page 650 of this issue.

At present, some 370,000 commuters (season ticket holders) travel into and out of Manhattan, the heart of New York City on the east bank of the Hudson, coming from both sides of the river. The majority reside in the State of New Jersey, but largely because of the inferiority of trans-Hudson transport facilities as compared with those on the east side of the river, their numbers are falling and the suburban railways in New Jersey are showing heavy deficits. On the other hand, commuters living in Westchester County and Long Island who can travel directly into Manhattan without having to cross the Hudson have doubled and trebled respectively in the past 30 years. The actual numbers in 1955 were: from New Jersey 151,000; from Westchester 87,000; and from Long Island 132,000.

Looking ahead, however, it is estimated that in 20 years' time a wide area will develop in New Jersey capable of housing 800,000 new residents and within an hour's journey of Manhattan. This is in contrast to

similar but limited areas in Westchester and Long Island, which together will be able to accommodate no more than 120,000 in the same period. The vital importance of the trans-Hudson traffic is therefore obvious. Like the Westchester and Long Island commuters, those living within easy reach of the Pennsylvania Railroad in New Jersey can travel direct to its terminal in Manhattan, often within walking distance of their business destinations. The great majority from the 12 counties of New Jersey within easy reach of the city, however, have to encounter various delays and much inconvenience due to the river crossing.

All the railways in New Jersey except the Pennsylvania terminate on the west bank of the river, and their passengers have to take either one of the ferries, a bus through one or other road tunnel, or the Hudson & Manhattan tube to cross to Manhattan. Other city workers make the journey throughout by bus or car; the relative average speeds are: 26 m.p.h. by train direct; 16 m.p.h. by railway and various trans-river connections; and 14 m.p.h. by bus.

Though private cars and buses carry most of the slack-hour traffic from and to New Jersey, railway facilities accommodate half the commuters, 75,000 daily, and nearly two-thirds of the rush-hour passengers. Clearly existing road facilities cannot carry even the existing peak-period traffic, and for cars to do so it is estimated that 20 new expressways in New Jersey, 10 road tunnels under the river, and 250 acres of parking space in Manhattan would be required, even if Manhattan streets could accommodate it. It is therefore vital that efficient rail facilities should be provided, in the crucial periods, to carry the increased traffic of the near future from New Jersey directly into Manhattan on their own right-of-way.

With this end in view, a New Jersey-New York bi-State authority is now recommended with powers to build a loop extension of the New York underground system under the Hudson and into New Jersey to interchange traffic with all the suburban railways in that state. It would also greatly improve the facilities of those railways, eliminate the ferries, and reduce travel time by creating an integrated rail system serving New Jersey commuters from their homes to their offices. This comprehensive scheme is described in an article on another page, and the brochure embodying these recommendations is reviewed on page 649.

Steel for Railways

THE demand for steel by railways in the coming years is likely to remain at roughly the present level, though they will continue to account for a slowly-declining proportion of the total consumption of steel. These conclusions are set out in a new United Nations publication, "Railways and Steel," prepared by the Steel, Engineering & Housing Section of the Economic Commission for Europe. Dealing with permanent way material, the report shows that output in most of the large producing countries has failed to increase substantially in recent years, or has dropped fairly sharply. An exception is the United Kingdom, where the 1936-38 level of output has been exceeded in each year of the period 1951-56: production in 1956 was 17 per cent greater than in 1937. The output of steel sleepers has decreased substantially in all European countries except France and the United Kingdom, where, largely because of increased exports, output has remained at the same level as in 1938.

In the United Kingdom, electrification is expected to require, directly, some 200,000 tons of steel in the next 10-12 years. This figure includes 66,000 tons for electrification on the third-rail system, which would be largely in the form of rails. Substantial extra quantities of steel for permanent way materials are likely to be required in the next few years in Austria, Western Germany, Italy, Norway, and Sweden, with a smaller increase in requirements in the United Kingdom and only a moderate increase in Belgium. Little change is expected in the demands for Denmark, France, Holland, Luxembourg, and Switzerland.

A striking feature of the rolling-stock industry, the report comments, is the large number of firms with a highly variable output. In 1954, there were in Western Europe 77 different establishments engaged in locomotive building, 15 of which were in the United Kingdom, 14 in France, nine in Italy, and eight in Western Germany. Some 240 establishments in Europe were engaged, in the same year, in building carriages and wagons, including 180 in Western Europe. The size of the works varied considerably, for in Belgium, 28 works produced 4,500 vehicles, and in Spain only 1,400 vehicles were produced by 20 establishments. In the U.S.S.R., on the other hand, 29 establishments built 36,000 vehicles, and British Railways, with 24 private manufacturers in the United Kingdom, built 64,000 vehicles in 1954.

The swing away from steam to electric traction is likely, as an immediate consequence, to reduce locomotive steel requirements by some 53 per cent, and the change to diesel traction by 73 per cent. Because of the shorter life of diesel and electric locomotives, the long-term reduction is likely to be 50 per cent for electric and 60 per cent for diesel locomotives. In 1956-65, the report estimates that the annual average requirements of steel for rolling stock in the United Kingdom will amount to 410,500 tons. This consists of 32,500 tons for passenger vehicles; 200,000 tons for wagons; 7,500 tons for electric and 13,000 tons for diesel locomotives; 32,500 tons for multiple-unit diesel and electric vehicles; and 125,000 tons for maintenance purposes (including maintenance of fixed installations). This is the highest requirement for any European country for which these particulars are available.

One chapter of the report deals with overseas export prospects, dividing markets into four areas—Africa; South and Central America; Asia (excluding the mainland of China); and Oceania (in which last presumably are included Australia and New Zealand). In these four areas, some 835,000 tons of track material a year were consumed in the period 1936-38. The amount increased after the war, and averaged 1,214,000 tons a year for 1951-55. After allowing for production in the areas concerned, the average annual level of imports of permanent way material in 1956-65 is expected to be 240,000 tons for Africa, 310,000 tons for Latin America, 280,000 tons for Asia, and 50,000 tons for Oceania. Requirements of imported coaching vehicles for Africa are estimated at 350 vehicles a year, a figure likely to be increased, and for Latin America rather less than 1,000 vehicles a year. Asia may need 1,000 units a year, and possibly more, but import requirements may be reduced over the years as home production, especially in India, goes up. Oceania will require only 175 units a year and this figure is likely to fall. Annual import requirements of freight vehicles are put at 6,000 units for Africa, rather less than 8,000 units for Latin America, 6,000 for Asia, and some 2,000 units for Oceania.

The calculation of locomotive requirements has been difficult because of lack of information on the age of existing locomotives, the tendency to change from steam to diesel and electric motive power in many parts of the world, and the lack of information on the plans of some overseas countries for building locomotives. The report suggests that the annual average requirements of Africa for locomotives in 1956-65, allowing for replacements and expansion, may be: 117 steam, 62 electric, and 133 diesel locomotives. The equivalent figures for Latin America are: 42, 87, and 324; for Asia, 405, 239, and 218; and for Oceania, 33, 27, and 72.

In general, the report concludes that passenger and freight vehicles are being built on an increasing scale in the traditional importing countries, partly, for the moment, on the basis of assembly of imported parts. It considers that markets for traction stock are likely to remain open for much longer, because of the greater complexity of locomotives. This, however, is the one field in which there is a clear decline in the demand for steel, brought about by the change from steam to electric and diesel locomotives.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Wheel and Rail Lubrication

November 25

SIR,—A method of wheel and rail lubrication not mentioned in Dr. Birmann's paper, discussed on page 413 of your issue of October 11, but currently under development by the Morgan Crucible Co. Ltd., is the application of a dry, solid lubricant.

Morganite lubricating rods meet the requirements set out by Dr. Birmann particularly well, and have the additional advantages of simple installation and easy maintenance. The Morganite rod is a composite one of very soft graphite encased in a hard carbon or graphite tube, the latter limiting the rate of wear. The deposited graphite mixture adheres well to the steel surface, and being a solid lubricant, there is little chance of it finding its way on to the tread. In service all that will be required is an occasional replacement of the lubricating rod.

For installation, the holder consisting of a tube and suitable loading device, is bolted or welded to the vehicle structure. The rod is in constant contact with the wheel flange, and can be applied by spring or air pressure, weight loading or by gravity alone.

Many field trials are in hand and preliminary reports are encouraging. It is hoped that they will lead to a solution of the flange lubrication problem with the minimum of mechanical complications.

Yours faithfully,

R. K. HURDEN

Carbon Products Department, Technical (Mechanical)

The Morgan Crucible Co. Ltd.,
Battersea Church Road, S.W.11

Demurrage Charges

November 23

SIR,—Mr. G. R. Parkes in his letter published in your issue of October 25, raises a vital subject. Apart from opportunity costs, the only substantial cost incurred by a wagon earning demurrage in a trader's siding is the interest on capital. The capital cost of ordinary types of wagon in the United Kingdom, according to the current edition of the "Directory of Railway Officials & Year Book," averages considerably less than £1,000. The annual cost at, say, 5 per cent on a capital cost of £1,000 is £50 and the daily cost on the basis of 300 working days a year is 3s. 4d.; a demurrage charge of, say, 6s. 8d. a day produces at least 100 per cent profit margin. The introduction of the five-day week in industry tends to increase the cost to 4s., but it also tends to increase the demand for both power and wagons by a like percentage; a shortage of rolling stock would tend to become more acute—though the cause may escape notice—and this leads to increasing delay to consignments.

If, because wagons are on demurrage, opportunity costs are incurred—if, that is to say revenue (less prime operating costs) is lost because of a shortage of wagons (and power) and all traffic offering cannot be carried, or is carried less expeditiously, then the cause is the shortage, and not the intransigence, of customers. If opportunity costs are large, the railway also is open to the charge of mismanagement.

If certain traffics are carried at such low rates that in extreme cases they are cross-subsidised, then any profit margin from demurrage, however small, is preferable to an operating loss. Such traffics probably exist only in theory as the result of thinking in terms of misleading average costs calculated on false assumptions; but if customers are driven elsewhere by increased railway charges or by increasing delays, then by the operation of a law similar to Gresham's, a railway tends to be left, as many are being left, with an increasing proportion of the less remunerative, less profitable, traffics.

If a trader prefers to pay 6s. 4d. a day for demurrage rather than bear the cost of modernising methods or otherwise increasing cost, the choice is his and demurrage is profitable for the railway. If railway transport costs are increased by higher demurrage charges, the trader may prefer to look elsewhere for transport—which is at a total loss to the railway. What is a "reasonable" charge depends not on some subjective standard but on cost, on the profit margin of each operation, and on competition.

The customer specifically referred to by Mr. Parkes as having 100 wagons a week on demurrage seems too important to risk losing by out-of-date monopolistic arguments. He is a customer. In conditions of free competition he will exercise freedom of choice. It seems that railways now have no choice but to ensure that the wagon and locomotive fleet is sufficient to meet all demands, including demurrage. If opportunity costs, equivalent to more than 4s. a wagon per day on the above cost assumptions are being incurred, then more rolling stock is required.

Yours faithfully,

A. R. G. SAUNDERS
Traffic Manager

Sierra Leone Railway,
Freetown, Sierra Leone

International Passenger Services

November 25

SIR,—In the article in your August 2 issue on international passenger services in Eastern Europe, it was stated that the Russians had requested the railway authorities in Western Europe to be allowed to run through sleeping cars from Moscow to Paris and Rome, but that these requests had not met with any success. If this is the case, one would like to know why. Since the Russians invented the device enabling passenger coaches to run on both their own and the standard European gauges, a through sleeping car has been running from Moscow as far west as Vienna. Now that there is no technical reason why cars should not run to Paris and Rome it seems reactionary in the extreme not to respond to a gesture at once so imaginative and so practical. There is no technical reason why a through coach could not be run between London and Hong Kong; but if this is too Utopian, let us at least have a service from Paris to Moscow.

Much, it is true, has been accomplished since the war in the way of improving international rail services. The through sleeping cars Paris-Oslo, Stockholm-Rome, and London-Brussels, and the new "Trans Europe Expresses," are cases in point. A pressing need is a through service from the Channel ports to the Franco-Spanish at Irun and Port Bou. Although traffic to Spain is now extremely heavy, particularly in the summer, this remains the one country to which no through service is provided. Why not carry things a stage further by adopting the Russian system of bogie-changing (already done at Irun and Port Bou in the case of fruit wagons) and running through coaches from Calais or Boulogne to both Madrid and Barcelona?

Yours faithfully,

P. J. R. WRIGHT

2, Duke's Lane Mansions,
Church Street, W.8

[Through working of U.S.S.R. vehicles between Moscow and other countries seems to be a matter of Russian prestige, where a break of gauge is involved, and not a commercial proposition. It is doubtful whether the volume of traffic justifies the expense of changing bogies. Some very long-distance international sleeping car services do not pay because traffic tends to go by air. This is not the case with "Trans Europe Expresses," which run over comparatively short distances.—ED., *R.G.*]

THE SCRAP HEAP

Eldritch Engine

Train whistles are normally content to confine themselves to the job in hand. Memory recollects one tootling away in glee and triumph as it passed Trent Bridge soon after the great Sir Donald Bradman had been dismissed, but this was a freak, and expressions of emotion are generally reserved for New Year's Eve. A little time ago, however, hundreds of peaceable Blackpool citizens were roused from their sleep by the whistle of a locomotive . . . which went on with its eldritch screeching for nearly an hour. A spring had, apparently, broken, but it is doubtful whether the explanation will satisfy those whose bedrooms were nearest to the sheds; men and women who may well feel that the shock has permanently unnerved them.—*From "The Times."*

Grouse Shooters' Railway

A railway primarily, it seems, for grouse shooters was promoted in 1859 and plans drawn up. The father of this scheme was Sir John Stewart of Ballygawley Park, Co. Tyrone, supported by other local landowners. It was proposed to build a narrow-gauge line from Dungannon to Ballygawley, via Donaghmore and Castlecaulfield. Local opinion was divided; those who opposed the scheme called it the "Grouse Shooters' Railway," for they fancied that Stewart was more anxious to accommodate his shooting parties on the moors than to serve the public good. The terrain is difficult; many earthworks would have been necessary; and the estimated cost was so high that after the Bill was drafted and all the plans in order, the project was abandoned. Ballygawley was later served by the Clogher Valley Railway, which ran for most of its way along the public roads.

The Adventure of Train-Riding

I will take a train any time in preference to the advertised convenience of taking an hour to get to the airport, half-an-hour to get clearance, an hour to get to the next airport, and another hour to trundle through dense traffic to the downtown area. We're all so hept-up about the new trains, which we won't see, and I doubt our grandchildren will, that we don't seem to notice that nobody is bothering to keep up the old-fashioned train. It says here—in yesterday morning's paper—"B. & O. will have to end its passenger route." . . . The B. & O. is an old railroad, that offered to travellers along the North-Eastern seaboard a pretty and alternative route between New York and Baltimore. It preserved in a cynical age the little boys' fond delusion that a train ride was an adventure. First, you took a bus from midtown, Manhattan; this took you to a ferry-slip and then you rode the ferry across the Hudson and went aboard the train at Jersey City. The B. & O., the Baltimore and Ohio, retains some of the incredible comfort of the trains of Edwardian times. It took its time doing something like an average 50 odd miles an hour instead of the usual 65 miles an hour; and when you went into the dining-car, white tablecloths glistened under a display of all the knives, spoons, forks, sugarbowls, maple-syrup pitchers that you'd need for the second breakfast on a ranch.—*Alistair Cooke in a B.B.C broadcast "Letter from America."*

Directors' Passes

Mr. Macmillan . . . had engaged himself to attend . . . a reunion dinner of former directors and staff of the Great Western Railway and to reply to the toast of "The old directors." This engagement must have been regarded with pleasure, for the alumni of the old G.W.R. are always proud of their railway. The Prime Minister still possesses the golden pass which he received as a director of the company and which permitted him to travel free throughout the system. It still does, apparently, for the Transport Commission recognises the validity of private enterprise directors' passes, and even issues metal passes of its own to senior officers of the Commission.

The new passes, like the old, are described as "medallions" about the size of a half-crown, but they are no longer golden: they are "of a metal resembling silver."—*From "The Manchester Guardian."*

Last of the Fintona Horse Tram

The branch of the Great Northern Railway of Ireland from Fintona Junction to Fintona was closed recently. The tram which provided the passenger service has been acquired by the Belfast Transport Museum

Here and There

The poor old railways have had their day,
Says Alistair Cooke, from the U.S.A.;
Particularly is this so
With the Baltimore & Ohio,
Whose takings have tumbled with such a flop
That they're seeking permission to shut up shop.

But, down in old Hampshire's countryside,
The British Railways proclaim with pride
That steam no longer can cater for
Traffic which seems to grow more and more.
So they're switching over to diesel power
And whipping a train through every hour.

Some of the diesels have got a cough,
But they're finding means to shake that off.*
The public like them and, I confess,
That's better than being adjudged U.S.
And ending up in a history book,
As sadly predicted by Mr. Cooke.

A. B.

*With the help of silencers

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

INDIA

Hindi Station Names

The combined efforts of the railways and the Survey of India will result soon in stations throughout the country being provided with their names in correct Hindi in the Devnagri script. The railways were some time ago asked to obtain authoritative transliteration of names from the Survey of India, and thereafter correct the names in the light of the advice received.

So far, 4,427 station names have been referred to the Survey of India. There were about 6,500 railway stations in India as on March 31, 1957.

To bring about uniformity in Hindi signboards and notices on railway premises and in railway carriages, the Railway Board has drawn up approved Hindi equivalents and sent these to the railway administrations, which has been asked to correct inaccuracies.

New N.E.R. Metre-Gauge Trains

The "Oudh-Tirhut Mail," running over the North Eastern Railway between Cawnpore, Lucknow, Gorakhpur, Katihar, and Siliguri, is composed of special sets in a blue livery, and with improved amenities for all classes of passenger.

The train is one of the fastest metre-gauge expresses in India. With a total seating capacity for 581 passengers, it is composed of 12 coaches, four third class, two second and third class composite coaches, one first class, one air-conditioned and first class composite coach, one restaurant car, and two third class baggage and guard's brake van composite coaches at either end of the train, also with a postal service car, part of which also provides third class accommodation. Of 581 seats, 10 are in air-conditioned, 45 in first, 68 in second, and 458 in third class.

All the 12 coaches were built in India, seven by private firms and five in the railway workshops.

WESTERN AUSTRALIA

Welshpool Marshalling Yard

After the adoption by the Government of the Welshpool marshalling yard proposals as outlined in the Stephenson Report on the metropolitan regional plan, engineers in the Chief Civil Engineer's Office of the Government Railways are preparing plans in readiness for the time when finance becomes available to commence construction.

Plans provide for the ultimate building of 48 classification sidings where wagons can be sorted, and 28 where complete trains can depart for various localities. The initial number of sidings to be built will depend on traffic requirements.

New Coal Contracts

New coal contracts that will save the Government £500,000 a year have been entered into with the three operating coal companies on behalf of the Railway Department and the State Electricity Commission. Under the contracts the Government will buy 32,000 tons a fortnight for a period of three years at a price of some 53s. a ton. The old price was 63s. to 68s. a ton, and the new price therefore represents a saving of over 10s. per ton. The new contracts are designed to increase the amount of coal produced from deep mines, ensuring employment for deep mine workers. Supplies from open cut mines will be progressively reduced, and after 12 months no open cut coal will be supplied to the Western Australian Government. The Railway's proportion of coal to be taken under the new contract represents approximately 6,000 tons a week.

CANADA

New Manitoba Line Proposed

A measure introduced into the Canadian House of Commons proposes the construction of a new 52-mile branch of the Canadian National Railways. This would run from Optic Lake, on the branch running north from Flin Flon Junction, Manitoba, to Chisel Lake. The estimated cost is $8,840,000. The same measure, if passed, will authorise the C.N.R. to purchase from the International Nickel Co. of Canada Ltd. the recently-opened 30-mile spur line running northwards from Sipiwesk on the Hudson Bay line into the Mystery-Moak Lakes area.

BRAZIL

New Rail Link

A loan of Cr. $2,000,000,000 is to be granted to the Government of the State of Rio Grande do Sul by the National Bank for Economic Development, for the building of a new railway linking Porto Alegre with Cai and Passo Fundo.

UNITED STATES

"Bi-Level" Coaches

The Chicago & North Western Railway has ordered from Pullman-Standard 13 double-deck coaches of an entirely new type for long-distance service. They will resemble the "gallery" type double-deckers which are in use on suburban services on the Burlington and other lines, in that the seating on the upper floor will be on the two sides of each car only, leaving the central aisle of each car open to the roof, and so making for more airy conditions than if the upper deck is floored right across.

Ten of the cars will be of the "coach" or second class type, with double seats on each side of the aisle at the floor level, and single seats along the length of each gallery, to a total of 96 seats per car. There will also be a parlour car, with 60 seats as compared

Ash-Handling at Rhodesian Locomotive Depot

New ash-handling plant at Bulawayo Running Shed, Rhodesia Railways. The ash discharged from locomotives is cooled immediately and conveyed to waiting wagons

with 25 in a standard parlour car; a composite coach-parlour car with 48 "coach" seats in one section and 30 parlour seats in the other; while the remaining vehicle will be a coach-bar-lounge car. Each car will be 85 ft. long and 15 ft. 10 in. high.

The new stock is to be used in re-equipping the "Shoreland 400" and "Peninsula 400" streamline trains between Chicago, Milwaukee, Green Bay and Upper Michigan, with two dining cars and two baggage-bar coaches which are being rebuilt from existing vehicles in the company's own shops.

Centralising Wagon Repairs

A new wagon repair depot of the Chicago & North Western Railway at Clinton, Iowa, centrally situated on the Chicago-Omaha main line 138 miles west of the former city, replaces 14 previous repair shops; these were located at various points on the North Western system. The new plant is designed to handle heavy repairs on 7,000 wagons a year, and build 1,000 new wagons annually.

On the assembly line, wagons move through the main erecting-fabricating shop from east to west and from there to the adjoining paint shop by electric towing. The former shop can accommodate 60 bogie wagons simultaneously and the latter 24, with a maximum daily output of about 40. There is also a wheel shop, largely automated, capable of producing 40,000 sets of wheels a year, with various other installations.

Every effort is made in receiving supplies to cut down individual handling, particularly by means of palletisation. Fork-lift trucks can be freely used. Timber also is being received in banded units for mechanical unloading; this has cut unloading time from 48 hr. to 2 hr. a wagon.

FRANCE

New Dover-Calais Car Ferry

A new car ferry, mv. *Compiegne*, of approximately 3,400 tons gross, now being built at Rouen for the French National Railways by the Chantiers Loire-Normandie, will be put into service on May 30, 1958.

This will be the first motorcar ferry vessel to be operated between Dover and Calais by the S.N.C.F. and British Railways. With a capacity of up to 164 cars it will increase by more than 50 per cent the number of car spaces available daily on the railway cross-Channel car ferries during the summer season.

At the ports, motorists will drive their cars on and off the ship which will have a large car deck aft and two car decks forward (upper and lower).

The captain will have a special bridge giving an uninterrupted view over the stern, with a high-definition radar at his disposal. He will have direct control over both propellors, which are reversible and driven by diesel engines, without having to give orders to the engineers. Lateral propulsion will be provided forward to facilitate the handling of the ship. The engines are being built by the Société Générale de Constructions Mécaniques at La Courneuve (Seine).

Reconstruction of Vouvray Bridge

When the railway bridge over Route Nationale 152 at Vouvray, near Tours, became due for renewal, the S.N.C.F. was asked by the Highways Department to arrange for wider road clearance. The former bridge had one 19-ft. 8-in. span arch over the road itself and two 7-ft. 10-in. span arches for pedestrians. The new bridge consists of one 43-ft. 3-in. span over road and pavement, with a height clearance over the road of 15 ft. 7 in. To obviate delay to trains, a temporary metal deck was put into use whilst preparatory work was carried out. The final deck, of concrete covered girders, was prefabricated and slid into position.

Publications Received

Metropolitan Rapid Transit Survey Report (to the Metropolitan Rapid Transit Commission of New York). By Arthur W. Page, Project Director, assisted by Engineering, Transportation, and Financial Consultants. Published by the Commission at 50, Broadway, N.Y.4. 11 in. × 8½ in. 53 pp. Illustrated with numerous maps and diagrams. No price stated.—This excellently-produced brochure embodies the report presenting a feasible plan to retain and improve trans-Hudson suburban passenger service and meet the pressing needs of the New York—New Jersey Metropolitan area by providing faster and more convenient and comfortable travel to Manhattan. After examining a number of alternative plans each with individual merits, the report concludes that an improved rail service is the only practical means of moving the existing 75,000 commuters and an inevitable increase in this number into and out of Manhattan in the rush-hour periods. Details of the scheme are discussed on another page.

Boat Trains and Channel Packets. The English Short Sea Routes. By Rixon Bucknall. London: Vincent Stuart Publishers Limited, 55, Welbeck Street, W.1. 10 in. × 7½ in. 218 pp. Illustrated. Price 35s.—This is a comprehensive and absorbing account of the rail-served passenger harbours of Dover and Folkestone and of the packet steamers and trains, their locomotives and rolling stock, serving them, from 1844, when the South Eastern reached Dover, thoughout the remainder of the last century—and the period of rivalry between the South Eastern and the London, Chatham & Dover—the halcyon days of the South Eastern & Chatham up to 1914, and the stimulating era of the Southern Railway, up to the present day. The long and complex history is told, as far as we are aware, with accuracy. The many photographic illustrations—some from rare prints—are excellent; this unfortunately is not the case with the maps. More might have been said of decisions made and policies pursued by Continental railways in so far as they have affected services via the two Kentish ports.

A Comprehensive Dust Collection and Control Service.—This folder, Publication No. 729, describes briefly the range of dust collection and control plant manufactured by the Gas Cleaning Division of W. C. Holmes & Co. Ltd., Turnbridge, Huddersfield. This comprises four distinct types of plant which is stated to cover the majority of industrial pollution problems. Copies can be obtained on application to the manufacturers.

B.I.S.R.A. Survey. 1957.—The 1957 edition of the Survey issued by the British Iron & Steel Research Association concentrates, as usual, on news of research projects which have reached an interesting stage of development, and reflect the current interest in process control and automation. The work of the Association's development section in assisting industry to adopt the results of research is particularly featured. Technical articles include progress in forge mechanisation; a new system of translator control; the measurement of rolled rods, forgings, and so on, at red-heat; and a scheme for a self-lining blast furnace.

Railways and Steel. Geneva, United Nations. 11 in. × 8½ in. 63 pp. Price 4s. 6d.—The Steel Committee of the United Nations Economic Commission for Europe (E.C.E.) considered that an examination of the future trend of demand for railway material and rolling stock would be of value. The E.C.E. Secretariat has, therefore, published this comprehensive and thorough report, dealing with the production of railway material and rolling stock; factors affecting the demand for steel by railways; official programmes in the railway field; overseas export prospects, and other matters. The document, now available in English, is to be followed shortly by a French edition and eventually by one in Russian. It may be obtained from the Sales Section, European Office of the United Nations, Palais des Nations, Geneva, or may be ordered through sales agents for United Nations publications.

French Railways Travel Literature.—The French National Railways have issued leaflets with suggestions for winter holidays on the Riviera and for winter sports in the Alps and elsewhere in France. This and other travel literature is obtainable from the office of French Railways, Limited, 179, Piccadilly, London, W.1.

Proposed Circle Line for New York

Plan to revolutionise New Jersey-Manhattan passenger transport

FACED with the rapidly-growing traffic in New York City and the expectation that within the next 20 years the population of Greater New York, situated in the States of New Jersey and New York, will have expanded from 15,000,000 to 19,000,000 souls and its urbanised area by 700 sq. miles, these two states decided in 1954 to create a new bi-State authority known as the Metropolitan Rapid Transit Commission to study and report on the problem. After comprehensive examination of all its aspects, and aided by engineering, traffic and financial consultants, Mr. Arthur W. Page, Project Director, presented his report to the Commission in May, 1957. The report is embodied in a 53-page brochure reviewed in this issue.

Before considering the recommendations in the report, some idea of present conditions of passenger transport in the area may be obtained from the editorial on another page.

This shows that the most important problem in the near future will be to provide the rapidly-increasing number of commuters (season-ticket-holders), for whom there will be additional residential space in New Jersey State, with adequate transport to and from their businesses in Manhattan. The primary object of the report was, therefore, to present a feasible plan to improve trans-Hudson suburban passenger services.

The over-riding conclusion on which the recommendations in the report are based is that rail service is essential to meet the needs of the area, there being no other practical way of moving the existing 75,000 and many more expected trans-Hudson commuters into and out of Manhattan during the daily peak periods.

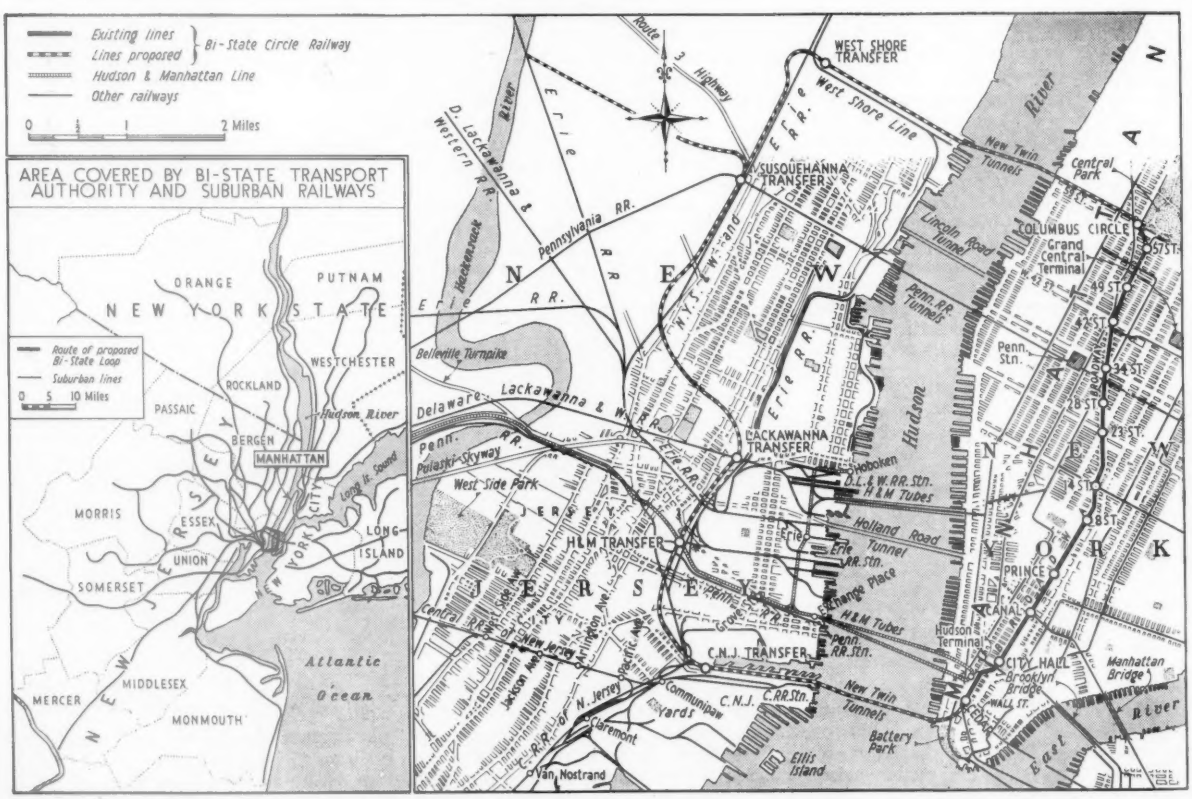
Main Objectives

With this end in view, a permanent New Jersey-New York bi-State public agency is recommended with wide powers: (1) to improve the existing non-paying railway service on the various suburban lines delivering passengers to the west bank of the Hudson; and (2) to extend the New York City rapid transit system across that river into New Jersey to provide direct access from existing railway and highway terminals on the west bank to all parts of Manhattan south of Central Park.

The agency or authority will thus require powers: (*a*) to construct new rapid transit facilities and acquire or control the suburban service properties of the railways in New Jersey; (*b*) to arrange for the operation of these properties under its own or the present owners' control; (*c*) to improve and expand the service by modernisation; (*d*) to initiate new services and abandon existing ones; (*e*) to determine fares and standards of services; (*f*) to contract for or operate feeder bus services where rail service is not justified; and (*g*) to have access to tax sources and other public funds to meet deficits.

Foremost among the above improvements envisaged are the replacement of about half of the old coaches still in service—of 1,300 only 150 are at present air-conditioned—the relocation of stations to provide adequate parking space and to speed up services by reducing the number of station stops, and the provision of good access to highways. Other improvements recommended are the amalgamation of duplicate services and terminals, the provision of adequate bus services where preferable to rail services, either as feeders to the existing New Jersey railways, or as direct services to a new trans-Hudson loop line on the west bank or into Manhattan by road tunnel.

The recommended plan consists of a closed loop or circle railway provided by new construction: (*a*) from 57th Street Station on the Brooklyn & Man-



The New Jersey-Manhattan area of New York, showing the route of the proposed circle line

hattan Transit line via Columbus Circle and 59th Street to the Hudson River; (*b*) under the river in twin tunnels; (*c*) onwards in New Jersey to an interchange station with the West Shore lines; (*d*) southwards to interchange stations with the Erie system (at Sasquehanna Transfer), the Delaware Lackawanna & Western lines near Hoboken, the Hudson & Manhattan trans-Hudson tube, and the Central Railroad of New Jersey; (*e*) in a second pair of twin tunnels back to Manhattan at Battery, to rejoin the Brooklyn & Manhattan Transit line near Cedar. By using the excess capacity of the B.M.T. line—mainly under Broadway—from Cedar to 57th Street, a circle will be provided serving Manhattan with frequent stations from Central Park to Battery (Midtown and Downtown areas).

Trains will run in both directions on the two tracks—the complete circle time being about 40 min.—offering a choice of directions as most suitable. The New Jersey section of the circle will intercept every Hudson-bound suburban line as well as every highway in being or to be built in future south of the George Washington Bridge over the Hudson. Wherever rail, bus, or motor-car passengers reach the new loop line they will have the choice of going by the northern part of the loop to the Midtown business area via 59th Street, or southwards to the Wall Street area via Battery, as well as to all intermediate points in Manhattan.

The scheme provides ample capacity to meet maximum peak-hour commuter traffic and adequate reserve for traffic growth. The authority would also be empowered to contract with the City of New York for making connections between the bi-State loop and the existing rapid-transit underground system and for running powers over its lines.

Hudson & Manhattan Tube

Complementary to the loop-line construction the modernisation of the downtown tubes of the Hudson & Manhattan would be undertaken, and if considered desirable in future years, rapid-transit services could be extended outwards from the loop along one or more of the suburban railways.

The immediate advantages claimed for the scheme are greatly-increased comfort and convenience for commuters, an average saving of time of 15 min. in each direction, the elimination of at least one interchange for most existing rail passengers, and their delivery within walking distance of their destinations in Manhattan. Bus and car passengers can board loop trains in New Jersey and be carried quickly and conveniently to anywhere in the business area free from delays on river crossings and in city streets. Ample parking space will be available for them at all loop stations.

Moreover, the improved services will benefit many more than the 140,000 passengers using them daily including slack-hour traffic. Residents and would-be residents in the rapidly-developing outer suburbs in New Jersey can be sure of this first-rate transit to their city offices and back; in the part of New Jersey within one-hour's travel time from Manhattan by the new system the population is expected to increase by nearly a million by 1975.

The total estimated cost of the whole project to be undertaken by the bi-State authority is some £143,000,000, including (*a*) £20,000,000 for replacement and modernisation of about half the existing rolling stock, (*b*) provision for the modernisation of the Hudson & Manhattan lines into Hudson Terminal in Manhattan, and (*c*) about £5,000,000 for improved parking and suburban stations in co-operation with the communities concerned. This sum would have to be obtained by public loan backed by the States of New York and New Jersey.

The present annual deficit on the New Jersey railways is no less than £4,650,000 under private operation. But savings under bi-state control are estimated to be £2,860,000 as a result of railway amalgamation, ferry elimination and working savings on the new rolling stock, so that the net operating deficit on the suburban lines is expected to be only £1,790,000. There will, however, be a deficit on the working of the loop system of just over £1,000,000 and on the railway improvement programme of £1,425,000, so that a total annual sum to be met by taxation will be about £4,250,000. It is proposed that the necessary tax levy should be apportioned among the 12 New Jersey and two New York counties west of the Hudson, and New York City on its east bank, according to the extent to which each directly benefits from the improved service.

Several alternative schemes were examined in detail, but though they had their advantages their higher costs or greater disadvantages ruled them out. They included suspended monorail and aerial transit proposals which, however, proved unfeasible.

Insulating Rails on Steel Sleepers

Neoprene insulation on South African Railways to facilitate track circuiting

A DIFFICULTY met with on certain railways in applying modern signalling with continuous track circuit control has been the presence of steel sleepers, often extending over a large mileage. This led, many years ago, to the development of axle-counting devices which of late years have been brought to a high level of efficiency and are in successful operation in many places, as for example on the Swiss Federal Railways.

At the same time attention was turned to the possibility of insulating the rails from the steel sleepers and several suggestions were advanced, some of which were the objects of practical tests.

The circumstances in which anything of the kind must function, concentrated load pressures, extremes of temperature, widely varying atmospheric conditions, and so on, complicate the problem, but the South African Railways report very good results from the use of protected neoprene pads.

Neoprene, a synthetic rubber, not liable to perish in the way natural rubber will do, is capable of withstanding a large amount of harsh abrasion while remaining unaffected by oil, water, or exposure to sunlight—qualities indispensable to meeting the requirements in this case. The rapid development of industry in South Africa necessitates increase in railway carrying capacity. For this purpose improved signalling is required on many S.A.R. routes.

To lay down wooden sleepers in place of steel—and it is not certain that such would always be available—would cost so great a sum per mile as to render the provision of up-to-date track controlled signalling prohibitive for all practical purposes.

Accordingly it was decided to investigate the question of insulating rails from the sleepers.

Neoprene Pads on F.B. Rail

The neoprene pads are folded round the base of the flat-bottomed rail and protected by two galvanised overlapping steel envelopes, the rail itself being held by specially designed clips and bolts. It was decided to test prototypes where burning ash deposits and water concentrations were regularly met with. The test proved generally very satisfactory and, after some small changes in the initial design had been effected, a further trial was made to ascertain whether the fittings would stand up well to high speed traffic on steep gradients and sharp curves.

Flashing Light Warning at Crossing

Eventually a flashing light level-crossing warning installation was brought into service, controlled by track circuits insulated in this manner, a process which now is to be considerably extended, in connection with remote control of crossing loops, full C.T.C. on some sections, non-token single-line block, local station protection, and so on, where savings amounting to many thousands of pounds can be realised by avoiding the installation of wooden sleepers.

Laying Long-Welded Rails in the N.E. Region

Method of laying 600-ft. lengths, which are slid off wagons right into their chairs without further handling

Short rails being tipped out manually from chair seatings as 600-ft. length is lowered from wagons

LONG-WELDED rails up to 300 ft. long are already in use in a number of places. Laying rails of this length presents difficulty and until quite recently the method adopted in this country has been to unload them from the carrying wagons on to the permanent way and then to manhandle them into their chairs. This is difficult enough with 300-ft. lengths of rail; with 600 ft. it is even more so, and next year a start is to be made in the North Eastern Region of British Railways in laying welded rails up to 600 ft. long.

After experiments in the Chief Civil Engineer's Department of the North Eastern Region, a method has been devised for laying in these long rails in one single operation. This was recently demonstrated to the members of the Civil Engineers' Committee.

The experimental laying, for which 600-ft. long-welded bullhead section rails were used, took place on the Fighting Cocks branch, near Darlington. This was the first time this particular method of offloading and laying in long-welded rails had been attempted on British Railways, and so far as is known, the first time in any country, including the U.S.A.

Bullhead rails of 95 lb. were chosen because they are more difficult to place in their chairs than flat-bottom rails, and it was considered that if the method succeeded with bullhead rails, there would be no difficulty with F.B. rails.

The flash butt welding plant in the Region is not yet in operation and for the purpose of this demonstration, lengths of rail had to be welded together to form two 600-ft. lengths whilst loaded on 10 Salmon type bolster wagons.

Special equipment was designed for holding the sections of rail upright on the bolsters; for guiding them off the wagons at normal rail spacing of 4 ft. 8½ in.; and for lowering the rail ends.

The ends were anchored to the track by 60-ft. steel wire ropes, and the 10 wagons were then drawn forward by a 350-h.p. diesel-electric shunting locomotive until the first 70 ft. of rail were clear, and the ends of each length had deflected down to the level of the rails in the track. The train was then brought to a stand and the wire ropes removed. One pair of the existing short rails were then tipped out manually from their chair seatings, and the ends of the long rails were put into position in the first two or three empty chairs, and fishplated to the end of the existing track.

Constant Speed Maintained

Thereafter the train was kept moving at a constant speed of about 30 ft. a min.—(the short rails were tipped out in pairs as the rear wheels of the last wagon moved clear)—and the 600-ft. rails were guided into their chair seatings by men using bars.

At the end of the operation, when only two or three feet of long-welded rail remained to come through the last pair of rollers, the train was stopped and the rail ends supported and lifted just clear of the rollers by chain lifting blocks suspended from a lowering gantry. The train was then moved forward and the rail ends lowered into their chair seatings.

Radio Used

Walkie-talkie radio equipment was used for communication between the engine and the working end of the train to control speed and movement. The whole operation required the assistance of 22 men.

Succeeding lengths of long-welded rail could be laid in the same way, although it is probable that in practice these would be fishplated to the first pair on the wagons during the offloading operation to avoid lowering the ends of each pair. The gantry would then only be required for lowering the ends of the very last pair of long rails to be laid.

The operation was planned under the direction of Mr. A. Dean, Chief Civil Engineer of the Region.

GWYDDELWERN GOODS AND PARCELS DEPOT TO CLOSE.—The goods and parcels depot at Gwyddelwern, between Corwen and Denbigh, in the London Midland Region, was closed on December 2. Alternative arrangements provide for merchandise, minerals, and coal class traffic, also parcels and passenger train merchandise at Corwen, Western Region, and livestock at Derwen, L.M.R.

HALLATON GOODS AND PARCELS DEPOT CLOSED.—The goods and parcels depot at Hallaton, between Market Harborough and Melton Mowbray, London Midland Region, was closed on November 4. Alternative arrangements have been made for merchandise, minerals, livestock, parcels, and passenger train merchandise. Horsebox traffic is dealt with at Market Harborough.

SUCCESSFUL EXPORT SERVICE.—In the 12 months since the "Export Express Service" was introduced, British Railways have carried over 10,000 wagon-loads of shipment traffic from industrial centres to the London Docks. During that time there has not been a single case in which a consignment has missed a boat because of failure of the service, even when operating under adverse weather conditions. The "Export Express Service" gives an assured next-morning arrival at the Royal, India, and Millwall Group of Docks for wagon-loads of export traffic despatched from 81 important centres on British Railways.

BRITISH FAIR OF INDUSTRY & COMMERCE.—The British Fair of Industry & Commerce is being held at Belle Vue, Manchester, on July 4-19, 1958. More than 160,000 sq. ft. of space will be available and the exhibition will be served rail and road transport. Ample parking and catering facilities will be provided. Among the many sections of interest to railway managements at home and overseas are those devoted to transport equipment and machine tools.

Diesel-Electric Locomotives for Ghana

General-purpose design with low axleload, for 3-ft. 6-in. gauge

General-purpose locomotive on local passenger train, Ghana Railways

TO meet the requirements of the Ghana Railway & Harbours Administration, 13 diesel-electric Bo-Bo locomotives of 400 h.p. have been completed by the Birmingham Railway Carriage & Wagon Co. Ltd. Of 3-ft. 6-in. gauge and low axleload, they have a maximum speed of 45 m.p.h.; they are to be used on passenger, freight, and shunting duties. Inspection and supervision of building was by the Crown Agents for Oversea Governments & Administrations.

The locomotive, suitable for continuous operation in either direction, is of the bonnet type with a full width cab situated between the equipment bonnets. In the layout and ventilation of the driving cab close attention has been given to operating convenience in tropical conditions and the disposition of auxiliary equipment has been arranged similarly to meet servicing requirements. This has largely been achieved by the frame mounting of groups of associated components and groups of associated components and by the grouping of cable, gauge, and pipe connections on accessible bulkheads.

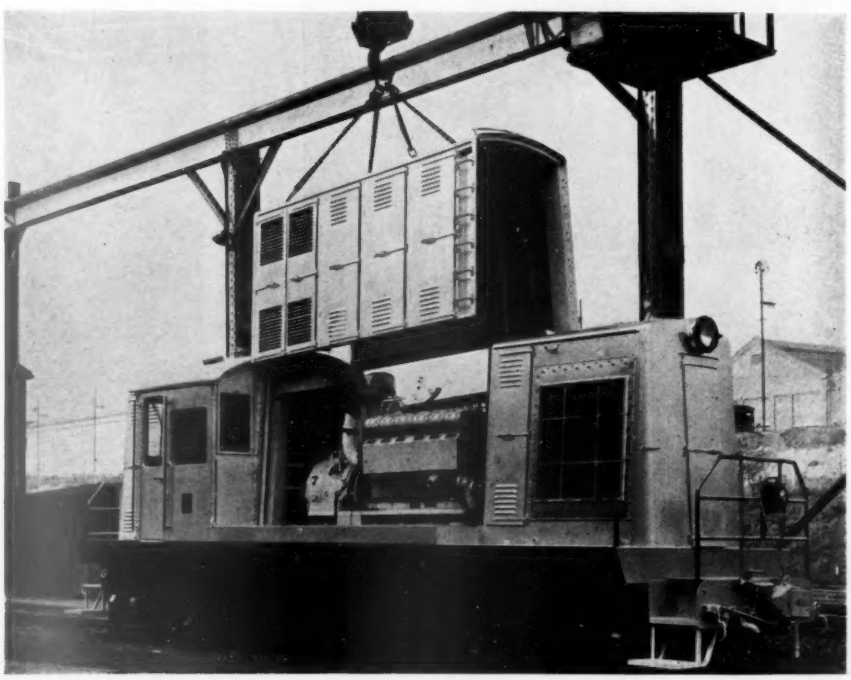
Power Unit and Generator

The power unit is the Davey, Paxman 12-cylinder RPHL Series II engine, direct-coupled to a Crompton Parkinson self-ventilated four-pole generator with a continuous rating of 254 kW. at 1,150 r.p.m. The engine and generator are mounted on a combined sump and bedplate, carried on four resilient mountings. An auxiliary generator with a continuous rating of 12·5 kW. at at 1,225 r.p.m. is mounted on the main generator frame and driven by multiple Vee belt.

Mounted on an extension of the auxiliary generator shaft is a centrifugal traction motor blower, the delivery from which is trunked down to the ducting in the main frame.

Good air filtration has been obtained by sealing off the generators from the engine compartment and fitting Air-Maze panel type filters in the compartment doors. Induction air for the engine is also trunked from this compartment to the engine inlet manifolds. Rubber sealing is fitted at the doors and junction of bulkhead and engine.

In the sides of a sealed compartment at the forward end are fitted two Serck panel type radiators, incorporating oil cooling sections. In the roof is a 45-in. diameter axial flow fan. This is engine-driven through a David Brown right-angle gearbox. A 30-gal



The engine-room casing being lifted in one piece, showing the Paxman engine, Crompton Parkinson main generator and the filtered-air trunking. Below the running plate can be seen one of the two fuel tanks

cooling water tank is mounted in the roof of the engine compartment.

Bogies of welded plate construction are of the non-swung bolster type. The deep flat-bottom cast steel centre pivots are fitted with manganese steel liners to take traction and braking forces and a phosphor bronze plate for load carrying. Body retaining plates are used instead of centre pivot pins; they are attached to the main frame and engage with spigots projecting from the bogie side plates. This permits normal movement but prevents excessive swivelling.

Hoffmann roller bearing axleboxes are fitted and manganese liners are used in the cast-steel horn guides. The steel disc wheels are of 36½ in. dia. Sanding is provided at the outside of each leading wheel.

Frame Construction

The main frame is fabricated, from rolled-steel sections and plates with the end platforms and dragbox members attached by gusset plates. The deck plate is supported on four longitudinal channels and the side sills which extend between the inner headstocks. The complete frame is stress relieved after welding.

At the inner end of each bogie is housed the 24-in. vacuum cylinder for the brakes; the vacuum reservoirs are mounted below the fixed bolsters. The light superstructure is fabricated from pressed-steel channels to which the bonnet sheeting is welded or riveted. A self-contained assembly is used for the bonnet section covering the power unit. Lifting eyes permit this to be removed for the changing of a complete power unit and generator.

The four force-ventilated axle-hung traction motors have a continuous rating of 71 h.p. at 660 r.p.m. and drive through single spur gearing with a ratio of 13:89.

Cab and Control Equipment

The main control cubicle is positioned against the cab forward bulkhead, surmounted by an instrument turret. At the front of the turret are the lighting switches, air pressure gauge, engine tachometer, lubricating oil pressure gauge and battery ammeter. Duplicated at each side of the turret are the speedometer, vacuum gauge, and ammeter. A driver's locker is incorporated in the centre section.

Conveniently placed at each side of the cubicle are the main engine controller, reverser and brake valves. Below the driver's tip-up sliding seat at each side is the deadman treadle with time-delayed action. At the right of the cubicle are the master key and series parallel changeover switches.

The controller has 10 power notches which operate on a servo-system through the governor. An automatic load regulator is incorporated. This, while ensuring that the maximum power and speed range is available in any notch, prevents engine overload in any position of the regulator.

Housed in the cubicle are the electromagnetic motor contactors, the drum-type reverser, four overload relays and an earth fault relay. Flag indicators are provided for visual fault indication.

Against the cab rear bulkhead is a control panel carrying electro-magnetic contactors for starting, exhauster motors, oil priming pump motor, and battery charging. Recessed into the bulkhead is a frame carrying ancillary brake equipment.

Auxiliaries

In the short bonneted section at the rear of the cab are the Nife starting batteries and the two Westinghouse motor-driven exhausters; the double doors at each side are well louvred.

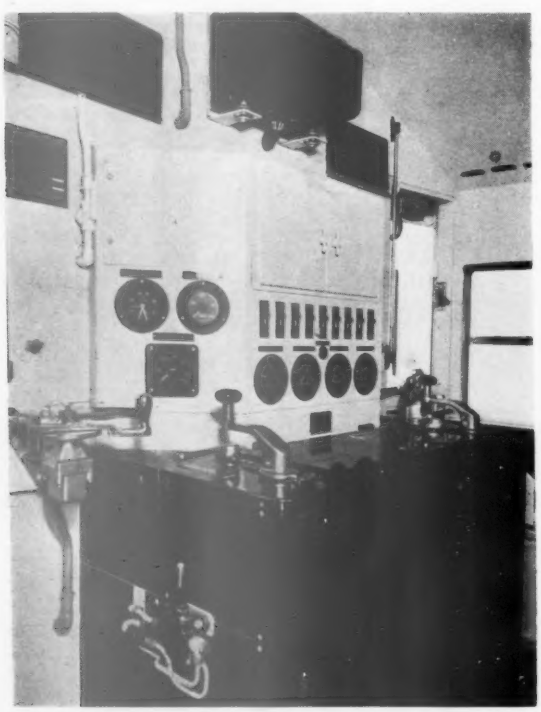
At the forward end of the engine compartment is an equipment frame on which are mounted the main lubricating oil filters; motor-driven lubricating oil priming pump; fuel oil priming pump; and engine protection switches. Engine overspeed protection equipment is provided.

The leading dimensions are:—

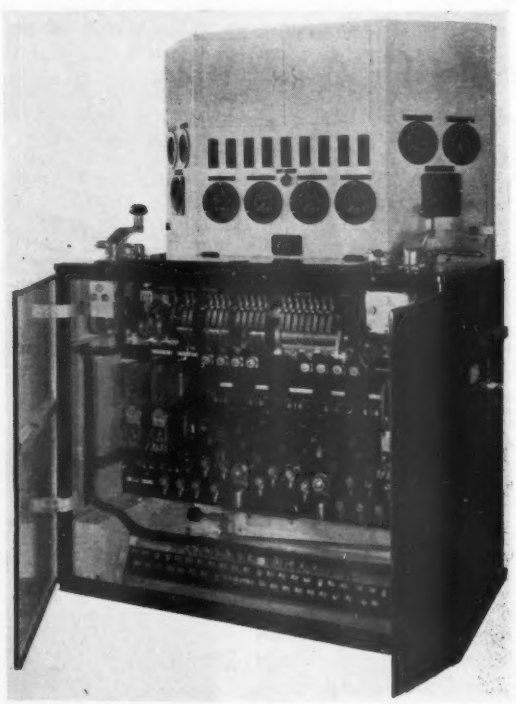
	ft.	in.
Length over couplers	37	4
Length over headstocks	34	6
Maximum width over cab handles	9	2½
Maximum height	12	8
Centres of bogies	17	0
Bogie wheelbase	7	0
Dia. of wheels	3	0½
Maximum weight	42 tons	

Principal sub-contractors were:—

Engines	Davey, Paxman & Co. Ltd.
Electrical equipment	Crompton Parkinson Limited and Allen West & Co. Ltd.
Vacuum brake equipment	Westinghouse Brake & Signal Co. Ltd.
Wheels and axles	Owen & Dyson Limited
Cab windows	Beckett, Laycock & Watkinson Limited
Roller bearing axleboxes	Hoffmann Manufacturing Co Ltd.
Electric lighting equipment	J. Stone & Co. (Deptford) Ltd.
Gauges and instruments	Smiths Industrial Instruments Limited
Batteries	Nife Batteries Limited
Radiators	Serck Radiators Limited



Interior of cab, showing duplicate driving positions and instrument panel



Control gear in main control cubicle, with instrument turret above

Developments in Spherical Roller Bearing Axleboxes—1

Fatigue life increased by improved design

Multiple-unit set built by the Metropolitan-Cammell Carriage & Wagon Co. Ltd., fitted with SKF bearings, and operating in North Eastern Region

AS a result of research and practical tests in a variety of applications, the design of the spherical roller bearing has been improved to give an increased fatigue life of some 200 per cent compared with that used in railway axleboxes for over 35 years. Recent work by the Skefko Ball Bearing Co. Ltd. has resulted in enhanced axlebox performance. The result is that bearings can be selected for long life in terms of mileage, although requiring comparatively little space; this has been achieved as a result of investigations into the factors influencing load distribution within the bearing, with the object of making the most effective use of the available sectional area.

The principal feature of the spherical roller bearing, its self-aligning property, has not been affected by the recent developments. Full advantage is often taken of this feature by using only one spherical roller bearing per axlebox, but even in rigid boxes where two bearings are used side by side, the self-aligning property of this kind of bearing is still valuable. Even in structures where alignment and rigidity are apparently perfect, alignment errors and deflection under load can occur in practice, resulting in undesirable stress concentrations within rigid-type bearings. Spherical roller bearings can align themselves automatically and reduce this additional loading.

Design Development

In view of the importance of these latest design improvements it is fitting to trace briefly the history of the development of the spherical roller bearing which was first produced in 1920. When the original design, see Fig. 1, was introduced, economical and reliable bearing schemes in many spheres of engineering and transport were made possible; and this type of bearing has been widely used in railway locomotives and rolling stock. The advantage of the spherical roller bearing is in two main features; its high load carrying capacity, and self-aligning property, the latter allowing the carrying capacity to be always used to the full.

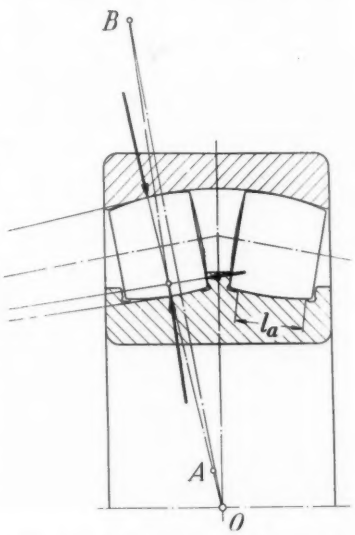


Fig. 1—Section through bearing of original design

As Fig. 1 shows, there is an integral flange between the tracks of the inner ring to guide the rollers. The rollers are barrel-shaped, with one end smaller than the other, and as a result they are pressed against the guide flange by a force which, although small, is sufficient to ensure their accurate guidance during running. The side flanges of the inner ring serve only to retain the rollers when the outer ring is swivelled during inspection or cleaning. The rollers do not contact these flanges during running.

Bearings of this design are usually fitted with a two-piece brass cage which has open roller pockets and is centred on the guide flange, the rollers being inserted into the pockets from the side.

The inner ring tracks and rollers have practically the same radius of curvature, and there is therefore line contact, or conditions closely approaching line contact, between rollers and inner ring track. The rollers have point contact with the outer ring, however, when not under load. There is a slight difference between the sphere radius of the track of the outer ring and the radius of curvature of the rollers, but this difference is so small that under load, contact between the rollers and the outer ring occurs over almost the whole roller length. Manufacturing considerations, however, and the necessity of ensuring that the unit will operate satisfactorily under all loads, make it essential to avoid too close a degree of conformity between the rollers and the outer ring track of the bearing.

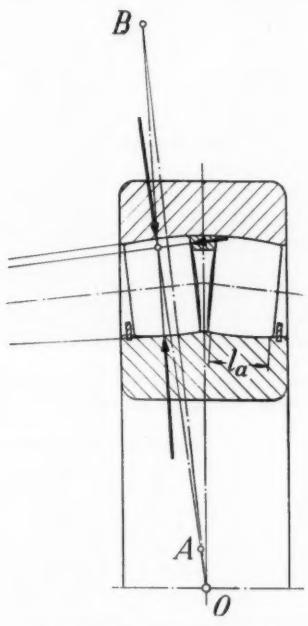
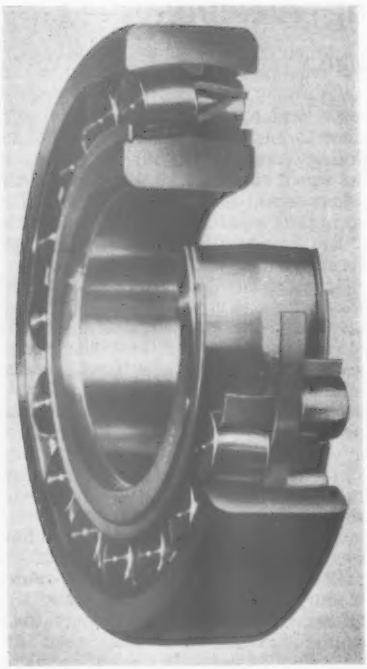


Fig. 2—Narrow-type spherical roller bearing

In Fig. 1, O is the centre of the spherical track of the outer ring, A is the centre of the radius of curvature of the



Cut away model of narrow type bearing

roller, and B is the common centre of the inner ring track and the radius curvature of the roller.

Narrow Bearing

The narrow type of spherical roller bearing shown in Fig. 2, is a variant of the design described above, and was introduced by SKF during the early 1930s. The inner ring has no flanges, and the rollers, which are asymmetrical as in the type previously described, are guided by a loose ring which is inserted in the outer ring by elastic deformation during assembly.

The rollers are held in position by retaining spring rings, when the outer ring is swivelled.

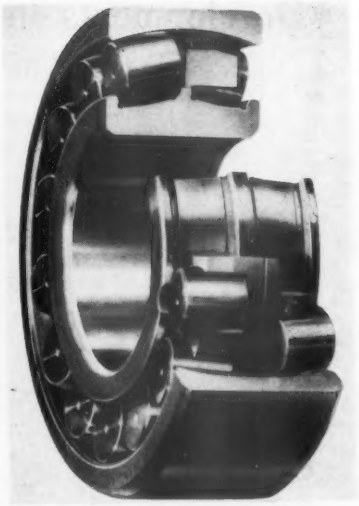
The degree of conformity between the rollers and the tracks is basically the same as for the wider type of spherical roller bearing already described. The narrow type bearing has a high radial carrying capacity, but its thrust carrying capacity is relatively low because of the reduced angularity of the rollers.

Practical Tests

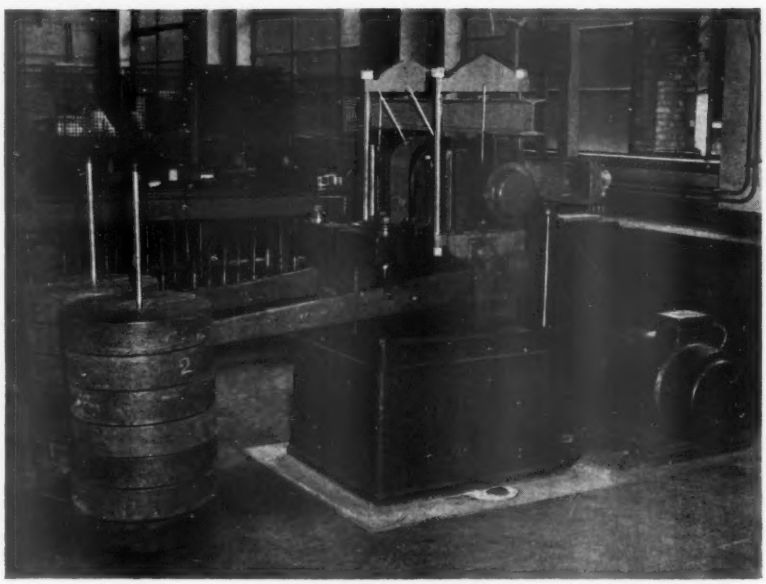
All bearing designs are subjected to rigorous practical tests in the company's laboratories, where some 30 test rigs of various sizes are in use. The particular test rig which is used for testing axleboxes for British Railways freight wagons, shown in the accompanying illustration, is typical of the specialised apparatus used in the development of new axlebox designs. This machine, which is at present in continuous use, has been designed so that loads and speeds can be varied to give conditions which are more severe than those encountered in service. Accelerated life tests of bearings are therefore possible. Moreover, the behaviour of lubricants and seals can be investigated in conditions approaching actual line service.

Heavier Loads

For some considerable time the two types of spherical roller bearing described above fulfilled the requirements of the engineering industry for roller bearings with high carrying capacities. In recent years, however, there has been an increasing demand for roller bearings with even higher carrying capacities, particularly for railway rolling stock, rolling mills, and other applications where radial space for the bearings is limited. This led to theoretical and practical research into the possibility of increasing still further the carrying capacity of spherical roller bearings. When considering a problem of this nature it is, of course, necessary to take into account all the various factors having an influence on carrying capacity. These are: the roller diameter; the effective roller length, that is the contact length between roller and track under load; the position of the line of action of the roller load in relation to the centre of the roller; and the degree of conformity between the rollers and the tracks. All the background of this research work has been drawn on in the design and development of the manufacturer's latest product, the C-type spherical roller bearing.



Original design of spherical roller bearing



Test rig in company's laboratories for mechanical testing of British Railways goods wagon axleboxes

(To be continued)

RECONSTRUCTION OF COVENTRY STATION.—Work is to begin on November 18 on the preparation of the site for the new parcels depot at Coventry Station, London Midland Region. This marks the first stage in the comprehensive scheme for the complete reconstruction of the station. The work will be carried out by Robert M. Douglas (Contractors) Limited, Birmingham, and involves the excavation of the site to the general level, the construction of retaining walls and the widening of the formation on the London side to provide the new formation for the sidings to serve the parcels depot.

RAILWAY NEWS SECTION

PERSONAL

On December 4, the British Ambassador in Paris invested Mr. Louis Armand, President of the S.N.C.F., with the K.B.E. (honorary).

Mr. C. K. Bird, C.B.E., General Manager of the Eastern Region of British Railways, who, as recorded in an editorial elsewhere in this issue, is retiring from that appointment for reasons of ill-health, was educated at King's School, Grantham, and St. John's College, Cambridge. During the 1914-18 war he served with the Honourable Artillery Company and the Royal Artillery. He began his railway career with the former North Eastern Railway in 1922 and, in 1926, was appointed Chief Staff Clerk to the District Superintendent, Leeds. In 1928 he transferred in a similar capacity to Middlesbrough, and, in 1928, moved to the Rates Office at York. In 1929 he was appointed Head of the Rates & Statistics Section, Chief General Manager's Office, and in 1932 he also became responsible to the Chief General Manager for Parliamentary matters. In 1934 Mr. Bird was appointed Assistant Goods Manager (Southern Area). Early in 1943 he was appointed Acting Goods Manager (Southern Area), in which position he was confirmed in April, 1945. He became Acting Divisional General Manager (Southern Area) in 1947 and later that year was appointed Chief Regional Officer, Eastern Region. This position was renamed Chief Regional Manager, Eastern Region, in 1953. Mr. Bird was appointed General Manager, Eastern Region, on January 1, 1955.

Mr. H. C. Johnson, O.B.E., at present Assistant General Manager, Eastern Region, British Railways, has been appointed to succeed Mr. C. K. Bird, whose impending retirement is recorded on this page, as General Manager of that Region.

Mr. C. K. Bird
General Manager, Eastern Region, British Railways, 1955-57

Mr. H. P. Millar
Manager, Purchases & Stores, Canadian Pacific Railway

Sayed Mohamed El Fadl, General Manager, Sudan Railways, left the Sudan by air on November 30 for a visit to London. The reason for this visit is not known, but it is understood that information as to his movements can be obtained from the Sudanese Embassy in London.

Mr. R. F. Harvey, Chief Operating & Motive Power Officer, British Railways Central Staff, British Transport Commission, is retiring for reasons of ill health early in the New Year. Mr. J. R. Pike's retirement from the position of Chief Commercial Officer, British Railways Central Staff, has already been recorded in this journal. The functions of Chief Commercial Officer and Chief Operating & Motive Power Officer are now to be merged into the single appointment of Chief Traffic Officer, and Mr. Frank Grundy, now Chief Traffic Manager, North Eastern Region, British Railways, has been appointed to this position. Editorial reference to the two retirements and to Mr. Grundy's appointment is made on page 643.

Mr. Charles Tourneur, Chef de la Division des Etudes de Traction a Moteur Thermique, S.N.C.F., has succeeded Mr. Kater as Chairman of the B.13 Experts Committee (O.R.E.) of the International Union of Railways.

Mr. R. E. Taylor, Chief of Transportation, Canadian Pacific Railway, retired on November 30 after more than 45 years of service. He has been succeeded by Mr. F. J. Fryer, Assistant Chief of Transportation.

Mr. H. P. Millar, who was appointed Manager, Purchases & Stores for the Canadian Pacific Railway, on January 1, is now touring the United Kingdom with the Canadian Trade Mission. Mr. Millar joined the Purchasing Department in Calgary some 37 years ago, and moved to Montreal in the summer of 1929. Successive promotions followed until in January, 1949, he was appointed Assistant to Vice-President, Purchases & Stores. He became Manager of stores in October of that year. Mr. Millar is a Past President of the Purchasing Agents Association of Montreal, and a former member of the General Committee, Purchases & Stores Division, Association of American Railroads.

Mr. Wilfred Latham has been appointed resident Scandinavian Liaison Officer of Birfield Industries Limited with an office in Stockholm. Mr. Latham, who has been resident in Sweden for a number of years, will be responsible for the interests of the company in Scandinavia.

Mr. D. S. Inman

District Goods Manager, Liverpool, L.M. Region, 1945-57

Mr. Peter B. Wilson

Appointed Chief of Operational Research, Canadian National Railways

Mr. H. E. W. Chapman

Appointed Passenger Agent, Liverpool, Canadian Pacific Railway

Mr. D. S. Inman, District Goods Manager, Liverpool, London Midland Region, British Railways, who, as recorded in our November 29 issue, is retiring, began his railway career in the booking office at Wilmslow Station in 1911. From 1912-14 he served at Waterloo Dock and Birkenhead goods stations. During the 1914-18 war he served in the Cheshire Regiment and, on demobilisation in 1919, returned to the railways in the Outdoor Goods Manager's Office, Northern Division, Manchester. He worked in Liverpool (1921-22) and, after a period in London, went to Leicester as Assistant District Goods Manager in 1928. In 1931 Mr. Inman became Assistant District Goods Manager, Liverpool, and following a further period in London, was appointed successively District Goods & Passenger Manager, Leicester, 1935; District Goods Manager, Leeds, 1943; District Goods Manager, Liverpool, 1945. Mr. Inman was a Member of the Liverpool Port Emergency Committee during the last war and also of the Ministry of Transport Working Party on queues at the docks in 1947. He is a Member of the Institute of Transport and was a Member of Council of that body from 1953 to 1956. When the Institute's Merseyside & District Section was formed in 1949 he became its first Chairman and held office for two years. In the Liverpool Chamber of Commerce Mr. Inman was Chairman of the Transport Committee, 1947-54, Vice-Chairman of Chamber in 1953 and 1954, and Chairman in 1955 and 1956. He has been a Member of the Upper Mersey Navigation Committee since 1945 and Deputy Chairman of that Committee from January, 1953.

Mr. C. G. Bunker, Freight & Passenger Agent, Dundee, Canadian Pacific Railway, has been appointed General Agent for the Canadian Pacific in Antwerp.

Mr. H. P. Potts has joined the board of the Colchester Machinery Corporation Ltd., of Toronto, Montreal, and Vancouver, which is associated with the Colchester Lathe Co. Ltd., of Colchester, Essex. Both are members of the 600 Group. Mr. Potts is Immediate Past President of the Machine Tool Trades Association and a member of the European Committee for the Co-Operation of the Machine Tool Industries.

Mr. Peter B. Wilson, who, as recorded in our November 29 issue, has been appointed Chief of Operational Research, Canadian National Railways, is 44, and is one of the few scientists who developed operational research from a speciality of the recent war to a new scientific field, first in Britain and more recently in Canada. A graduate in, and former professor of, mathematics at the University of Glasgow, Mr. Wilson served in the Underwater Detection Establishment of the Royal Navy during the 1939-45 war, co-ordinating operational research. He continued his scientific research work with the Admiralty until 1952 when he was posted to Ottawa and the Defence Research Board. Since 1954 and until his recent appointment with the C.N.R., he has served the Defence Research Board as Director of Operations Research for the Canadian Army and for the Canadian Navy.

The following retirements and appointments have been announced by the Canadian Pacific Railway :—

Mr. C. C. F. Young, General Agent, Belfast, retired on November 30 and was succeeded by Mr. E. E. Sayers, Passenger Agent, Liverpool. Mr. H. E. W. Chapman, Passenger Agent, London City Office. succeeds Mr. Sayers at Liverpool, and Mr, Cyril A. Pegg of the West End Office, becomes Passenger Agent in the London City Office. Mr. John Munro, London Manager of Canadian Pacific Steamships, also retired on November 30. His successor is Mr. Alan Hodgkinson, Deputy Secretary, Head Office, Liverpool.

Mr. Young has completed 47 years of service with the C.P.R. He joined the company in 1910 at Liverpool and was transferred in 1914 to London. During the 1914-18 war he served in the Army, was wounded and, on recovery, was commissioned in the South Lancashire Regiment. He returned to the C.P.R. at Liverpool in 1919 and, three years later, transferred to the Passenger Department in London. He travelled to South Africa, Australia, and New Zealand as Special Representative for the company's passenger and cruise business. During the last war he was loaned to the Canadian Red Cross Society's Overseas Headquarters in London, later becoming Assistant Commissioner. At the end of 1946 he returned to C.P.R. service and became Passenger Agent at Liverpool the following year. He moved to Belfast in 1952.

Mr. Munro has completed nearly 37 years of service. He was born in Inveraray, Argyllshire, and joined the C.P.R. in the Sales Department at Liverpool in February, 1921, transferring to Glasgow the following year. In 1923 he moved to the management department there and, on the close-down of the company's Clyde to Canada service in 1931, became responsible for the operation of the short cruise service to the Mediterranean by ss. *Melita*. In 1938 Mr. Munro returned to Liverpool, and, in 1943, was promoted to be Port Agent at Southampton, where he was principally concerned with the operation of the two assault ships, *Empire Lance* and *Empire Cutlass*, which took part in " D-Day " and subsequent operations of the invasion of North-West Europe. In 1946 he returned to Liverpool as Port Agent and, with the re-establishment of the " Beaver " freight service from London, became London Manager in 1948.

Mr. Hodgkinson joined the company in 1918 at Surrey Commercial Docks after service with the forces which included the Gallipoli campaign. (In 1934 he returned to Gallipoli as a cruise director when the ss. *Duchess of Richmond* was chartered by the Royal Naval Division for their pilgrimage.) In 1922 he was transferred to the company's head office, then in London, and became London Secretary in 1940. Later the head office was transferred to Liverpool and, in January, 1953, Mr. Hodgkinson became Deputy Secretary, the position he now relinquishes to become London Manager.

Mr. H. E. W. Chapman, who, as recorded in the preceding item, has been appointed Passenger Agent, Liverpool, Canadian Pacific Railway, has served in the C.P.R. for over 35 years. He joined the company in the then Headquarters at London straight from school in 1922. He was transferred to the London City office in 1926 as General Booking Clerk and before the war went as Assistant Cruise Director on many cruises during the winter months. He also went to Canada as a tour conductor. During the war he was commissioned in the Royal Engineers

(Movement Control), returning to the City office in 1946. He toured Canada in 1953 and was promoted to be Passenger Agent, London City office in 1955, the position he now leaves. He is a Freeman of the City of London and has been Chairman of the City of London Travel Club.

Mr. John Matthews, General Freight Agent, Canadian National Railways, has been invited by the Institute of Transport (Merseyside & District Section) to address their members on December 5 at their monthly meeting in Liverpool. The subject of his talk will be "The Canadian Railways and the St. Lawrence Seaway."

Mr. H. S. Hunt, Goods & Mineral Assistant, Railway Clearing House, has been appointed Assistant Secretary of that organisation.

The London Midland Region of British Railways announces the following appointments:—

Mr. K. L. Mallory to be Staff Assistant to Director of Traffic Services.

Mr. J. F. H. Kearney to be Assistant District Traffic Superintendent (Traffic Operating), Chester.

Mr. H. L. Arber to be Assistant (Electrification Works Section), Euston, Chief Civil Engineer's Office.

Mr. J. B. Hastie, Scottish Divisional Manager, British Road Services, since the inception of that organisation in 1948, is retiring at the end of the year. He will be succeeded by Mr. J. P. (Ian) Young, who has been District Manager in Glasgow since 1949.

Mr. W. H. Smith, North Western Divisional Engineer, British Road Services, has been appointed Rolling Stock Engineer, Chief Engineer's Department, B.R.S. Headquarters, as from December 2.

Mr. Malcolm LaPrade, Vice-President, Public Relations, Thos. Cook & Son Inc., has retired. Mr. LaPrade joined the company in the Publicity Department at New York in 1922. Three years later he began the first series of Cook's Radio Travelogues, using the pseudonym "The Man From Cook's," and over the ensuing 14 years his commentaries on travel were broadcast over national networks. Since then he has appeared as a guest on many radio and television programmes. He was appointed Chief of the Publicity Department, Thos. Cook & Son Inc., New York, in 1931, and Vice-President in charge of advertising, programmes, and public relations in 1947.

Mr. Christian Barman, Chief Publicity Officer & Executive Member of the Design Panel of the British Transport Commission, has consented to be the Speaker at the next Design Oration to be held at the Royal Society of Arts, on February 7, 1958, at 7 p.m. The subject of his Oration will be "Design in Tomorrow's Industry."

The expansion of the John Bull Rubber Co. Ltd., particularly since the formation of the John Bull Group when the company merged with Metalastik Limited and Precision Rubbers Limited, has necessitated considerable internal reorganisation. A management committee has been set up to aid the Board in an advisory capacity. The committee will also keep under review statistical and other results. Members of the committee so far announced are: Mr. R. E. Booth, Management Executive; Mr. E. Clarke, Chief Accountant; Mr. N. Cloud, General Materials Manager; Dr. E. R. Gardner, Technical Manager; Mr. G. E. Rowe, Chief Engineer; Mr. A. J. Smith, Works Manager, Grimsby factory, and Mr. E. C. Woods, Works Manager, main Leicester factory. In addition, Mr. R. N. Chambers, Production Manager, Metalastik, has been invited to join the committee.

Mr. C. P. McCallum has been appointed Area Manager of Alldays & Onions Limited, as from January 1, 1958. The area covered is Lancashire, Cheshire, Flintshire, Denbighshire, Caernarvonshire and Anglesey.

Mr. R. P. Key has been appointed an additional director of William Doxford & Sons and of its subsidiaries William Doxford & Sons (Engineers) Ltd. and William Doxford & Sons (Shipbuilders) Ltd. Dr. E. P. Andreae has retired from the boards of these subsidiaries. Dr. Andreae recently retired as Chairman of the parent company but continues as a director.

Presentations made to Mr. J. R. Pike, Chief Commercial Officer, British Railways Central Staff, British Transport Commission, who has retired, included one from Mr. R. C. Bond, President, Senior Officers' Mess, B.T.C. (photograph below). Messrs. J. W. Watkins, A. J. Pearson, H. Elliott, F. R. Stockdill, A. E. Robson, R. F. Harvey, and D. Murray were also present. Another presentation was made by Mr. W. H. F. Mepsted, Chief Commercial Manager, Southern Region, at a dinner at the Charing Cross Hotel on November 22 (Mr. Pike was Chairman of the Commercial Committee for the last three years and had been associated with the Committee and its predecessor bodies for many years). A third presentation was made by Mr. F. A. Pope, on November 20. The presentation, made on behalf of colleagues, was an antique silver salver on which were engraved the facsimile signatures of those associated with the presentation. The signatures were those of Messrs. F. A. Pope, A. L. Castleman, M. G. E. Lambert, R. L. Charlesworth, P. G. Price, E. W. H. Powell, G. E. Curtis, W. B. Carter, K. L. Mallory, A. Jones, T. W. Polding, H. Barrett, W. R. Davies, H. G. N. Read, J. W. Tonge, W. N. Roberts, T. E. Jackson, A. E. Marriott, F. Grundy, H. Bullough, D. S. Inman, E. S. Hunt, T. C. Byrom, and A. Jessop.

Mr. A. J. Somers, a director of Borax (Holdings) Limited since 1946, has retired after 36 years of service with Borax Consolidated Limited.

Mr. R. Tuddenham, who has served with the G. D. Peters Group for 37 years, has recently been appointed Chief Sales Engineer for the whole of the group's road, rail, and general engineering products. He will have charge of all the Group's sales representatives in those fields. Mr. Tom Dolby, Sheffield Representative, takes over the Lancashire & Cheshire area, and Mr. F. Wharton, Midland Representative, will include East Anglia in his territory.

Mr. Langston Highton, Managing Director of the Workington Iron & Steel Co. Ltd., a branch of the United Steel Companies Limited, will relinquish this position on December 31 after 47 years of service. He will continue to be a director of United Steel and of its associated companies in Cumberland. Mr. T. S. Kilpatrick, Director & Deputy General Manager at Workington, will be appointed Director & General Manager on January 1 next. Mr. D. R. Wattleworth retires as Director & General Works Manager on December 31 after 50 years of service. He will be succeeded as General Works Manager by Mr. T. Sanderson, at present Assistant General Works Manager.

HUNDREDTH JONES CRANE FOR BRITISH RAILWAYS.—In recording, in last week's issue, those present at the handing over ceremony of the hundredth Jones crane to British Railways, reference was made to Mr. E. J. Edwards, Irish Traffic Superintendent, London Midland Region. This should have read Mr. F. J. Edwards of the Irish Traffic Superintendent's Office, Euston.

Mr. R. C. Bond, President of the Senior Officers' Mess, British Transport Commission, makes a presentation to Mr. J. R. Pike, Chief Commercial Officer, British Railways Central Staff, who retired on November 30 (see paragraph above)

NEW EQUIPMENT AND PROCESSES

Hydraulic Elevator Truck

THE VTR/30 has recently been introduced as an addition to the Vertolifter range of hand-operated hydraulic elevator trucks. The model incorporates a new size of platform—20 in. long × 21 in. wide—and is available with two heights of lift, 48 in. and 60 in.

The truck is constructed using steel sections of adequate gauge and design for the load capacity of 500 lb. All moving parts have either ball or roller bearings. The hydraulic pump is double-acting and finger-tip control allows the load to be lowered at any speed with instant stopping at any point.

The overall width of 23½ in., standard on all models in the range, is claimed to allow the unit to be used in confined places, taking up little storage space.

Full details as to price and delivery can be obtained from the manufacturer, Powell & Company, Burry Port, Carms., South Wales.

Air-Operated Lubricant Delivery Pumps

A RANGE of high- and low-pressure air-operated pumps, suitable for delivering a wide range of lubricants is now being produced. Applications include mobile lubricating trolleys, oil stores, and hose units.

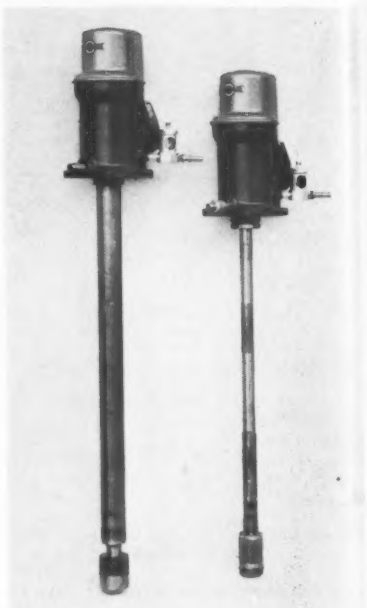
The high-pressure pump, designated T.B.H., has a pressure ratio of 45:1, which enables a wide range of lubricants to be pumped at practically any temperature. The air motor is of advanced design and is economical in air consumption.

Construction of the pump mechanism is simple, with a small number of working parts. A fine-gauze strainer is fitted which excludes all foreign matter. Special features are that the pump will not airlock, has extra suction, is non-fouling, and requires a minimum of servicing.

It is produced in four versions for various sizes of containers. These are designed for a 56-lb. drum, with a drum lid; for a 130-lb. drum, with a drum lid; for a 130-lb. drum, with an adjustable lid; and for a 400-lb. barrel with an adjustable lid for varying diameters and depths of barrel.

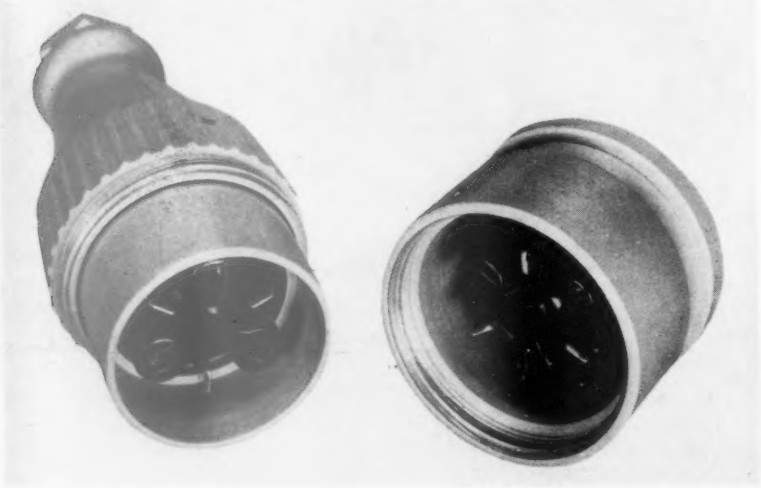
The low-pressure version, T.B.L., has the same air motor but with a pressure ratio of 4:1. This pump is available with a float valve for metering and both high- and low-pressure pumps are fitted with an efficient oil mist lubricator on the air inlet, which ensures that the working parts of the air motor are kept regularly lubricated.

These pumps, which can be completely dismantled and re-assembled in 15 min. without special tools, are available to suit 56-lb., 112- to 130-lb. and 400-lb. lubricant packages and for 5-, 10-, and 44-gal. drums, also for bulk tanks and containers.



The float valve version is available to suit a 5-gal. drum with drum lid; a 10-gal. drum with bung fitting; a 44-gal. barrel with adjustable bung; for 30-in. tanks with fixed mountings; and for 32-40-in. tanks with adjustable mountings. Without the float valve, it is available for a 5-gal. drum with drum lid; a 10-gal. drum with drum lid; and a 44-gal. barrel with adjustable bung.

Further details can be obtained from the manufacturer, Tecalemit Limited, Plymouth, Devon.



Improved Contact Connectors

A RANGE of plugs and sockets to ensure higher quality and greater sensitivity of electrical circuits is now being manufactured in this country under licence from Tuchel Kontakt, of Germany. Applications include machine tool control units and rolling stock installations.

The patented contact principle employed on these connectors is based on the theory that surfaces kept free of oxide film and dirt are more important factors than contact pressure.

Basically, the contact consists of a series or bank of tubes of decreasing diameters, opened longitudinally with two or more transverse slits, assembled one within the other. As the bevelled blade is introduced, the front edges of the spring assembly rub against it cutting through existing dirt or oxide film. This process is repeated through each bank, until the contact blade is fully inserted. A feature of the system is that the spring banks are not rigidly secured, but float in the connector assembly. This floating action ensures that the pressure exerted by the individual springs upon each side of the contact blade is always balanced. Other advantages claimed are a multiple number of independent contact points for each pole, low contact resistance with large contact

area, unaffected by vibration, effective in a wide range of temperature, and simple engagement or disengagement.

Initially, production of these connectors will be limited; although delivery can be immediate. The variety of plugs and sockets available is from ¼-in. dia. 6-pole units, or less, each carrying 5 A. at 125 V., to 5-in. dia. units, 36 poles per unit, each carrying 60 A. at 500 V. Experimental work is also being carried out to improve existing designs and create new types based on this principle.

Manufacture in this country is being undertaken by Modern Acoustics Limited, Contact Connectors Division, Manor Way, Boreham Wood, Herts.

Workshop Storage Trays

INTERLOCKING bench assembly and storage trays, type UT.75/F, are now being produced. The trays which are moulded in resin impregnated compressed fibre are claimed to be extremely versatile.

The products, which are seamless and silent in use, can be used in a straight line, a semi-circle or a combination of both. They can be locked together by insertion of nails, screws or rivets. They are designed with sloping fronts and backs which permit the trays to be used by two operators, one either side.

They can be nested when empty; and stack when one is turned 90 deg. to the one below.

Inside dimensions of the trays are: 9½ in. long × 5¾ in. wide (tapering to 4 in.) × 2½ in. deep; the colour is natural.

The price of the UT.75/F trays is 2s. 6d. each, net; further details may be obtained from the manufacturer, Precision Components (Barnet) Limited, 13, Byng Road, Barnet, Herts.

Wood Laminate Flooring Material

NOW available in this country is a laminated wood flooring called Permadec. The material is designed specially for applications requiring a hard-wearing plastic material that still retains the appearance of natural wood. Applications include railway rolling stock; this flooring is claimed to reduce the dead weight of coaches by 75 per cent compared with a magnesium/cement flooring mixture. Because of its electrical, thermal and sound insulating properties, Permadec has been used in nearly 500 electric and diesel-electric locomotives since 1949 and is standardised for this purpose by the French National Railways. Other transport applications are for public service vehicles, lifts and escalators, and so on.

It is the colour of deep mahogany and the top side of each sheet has a grooved or chequer plate surface. The material is made by impregnating beechwood veneers with phenol formaldehyde resins which are then hydraulically compressed under a high temperature and pressure into a homogeneous sheet.

The product is claimed to have a long life compared with traditional forms of construction such as wooden slats, or combinations of sheet steel, cork, linoleum or rubber.

An unsupported panel 40 in. × 24 in. × ½ in. bolted round the outside to an angle-iron frame, withstands a uniformly distributed load of 270 lb. per sq. ft. with a deflection at the centre of ¼ in. The weight of a ½-in. thick panel is 28 lb. per sq. yd. Resistance to wear is stated to be constant throughout the material and examination after 15 years' continuous service has shown practically no wear whatsoever. Various thicknesses are available from ¼ in. upwards and the standard size sheet measures 5 ft. × 3 ft. Alternatively it can be cut to the most economical size.

Further details can be obtained from the manufacturer, Permali Limited, Bristol Road, Gloucester.

Ductless Oil-Filled Cable

A 33-kV. ductless, shaped-conductor oil-filled three-core cable, referred to as the D.S.O. cable, has been developed with a range of joints and terminations which have passed the British Electricity Board type test requirements. The main innovation is the introduction of shaped conductors such as are commonly employed in 33-kV. solid type cables. The free space between the cores has been used for oil flow. Circular conductor oil-filled cables incorporate metallic spiral ducts for this purpose since they include paper fillers to give the sheath sufficient support to maintain its circular construction.

The D.S.O. cable is available with either copper or aluminium conductors over the range of sizes 0·20—0·60 in.² (125—390 mm.²) and either lead sheath or seamless aluminium sheath can be supplied. When a lead sheath is used metallic tapes are applied over the sheath to enable it to withstand the internal oil pressure. The aluminium sheath requires no such reinforcement owing to its greater inherent mechanical strength.

Anti-corrosion protection is achieved by an overall serving composed of a layer of self-bonding rubber tapes sandwiched between P.V.C. tapes and covered by a wrapping of bituminised hessian tape. This serving is available in several forms to meet particular requirements.

The adoption of this design has resulted in cables of reduced dia., and with the omission of built-in ducts and fillers and lesser oil volume, lower cost is claimed compared with the corresponding circular conductor cable. The use of an aluminium sheath, which requires no reinforcement, is stated to be more economical again.

The D.S.O. cable is designed to operate at a maximum conductor temperature of 85° C., this temperature having been the accepted standard for oil-filled cables in Great Britain for several years. The current ratings are similar to those of equivalent circular conductor oil-filled cables and are some 20 to 25 per cent greater than those of equivalent 33-kV. solid cables. The illustration shows the D.S.O. cable compared with the corresponding circular conductor cable.

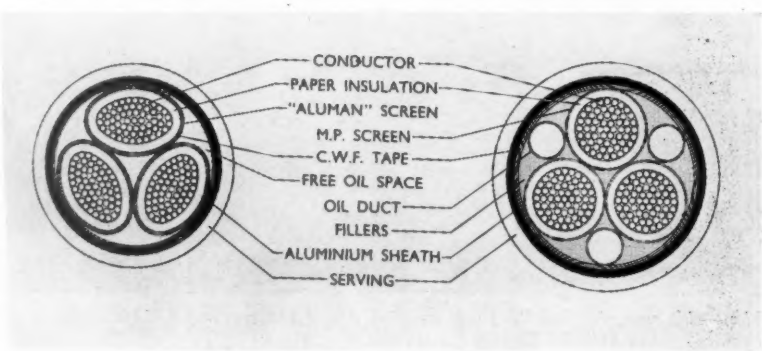
The D.S.O. cable is manufactured by British Insulated Callender's Cables Limited, 21, Bloomsbury Street, London, W.C.1, from which full details can be obtained.

Improved Pattern Making Resins

THE advantages offered by the use of epoxide resins for making plastic patterns, jigs, checking fixtures, core boxes, and so on, are offset to some extent by the toxic and dermatitic risks associated with this type of resin and the hardeners used with them.

One of the pioneers of the use of epoxide resins for tooling purposes, however, has been carrying out extensive research work on the problem, and has recently announced that its new hardeners for use with Epophen epoxide resins have greatly reduced these hazards. Recent experience has shown that no irritation troubles have occurred through daily use of these hardeners in conjunction with Epophen resin, it is stated, despite the fact that in a number of cases those handling epoxide resin/hardener combinations have previously been subject to irritation troubles.

Further details may be obtained from the manufacturer, Leicester, Lovell & Co. Ltd., North Baddesley, Southampton.



Conveyor System at High Street Depot, Glasgow

To speed up the movement of traffic between the loading dock and warehouse, and at the same time reduce handling, the Scottish Region of British Railways has introduced at the High Street Goods Depot, Glasgow, a new conveyor system. The warehouse accommodation is situated on two floors over the depot, each floor having a storage capacity of some 10,000 sq. yd.

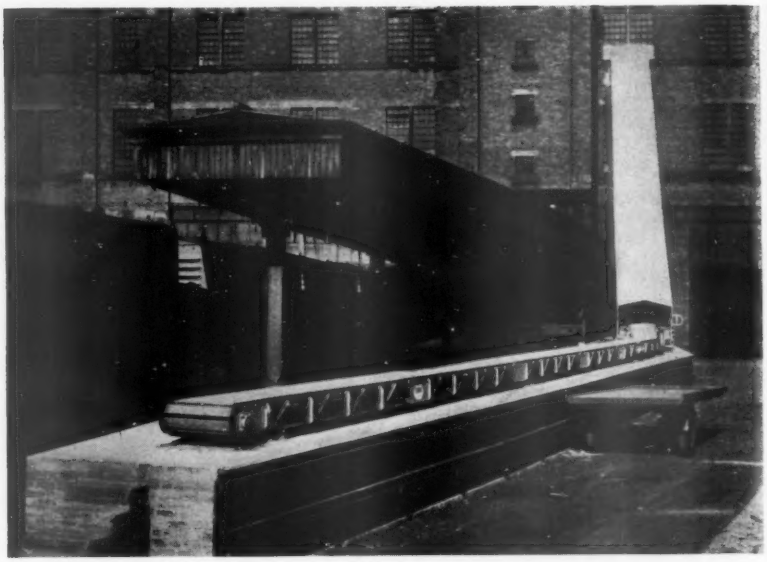
Most of the top floor is used for the storage of empty bottles in crates and cartons and some 150 tons are dealt with each day in and out of the warehouse. To expedite this movement a new electrically-powered conveyor system has been installed with three sections for the various phases of work. A small conveyor takes the traffic from railway wagons to the main conveyor. The ends of this can be raised when not in use. The canopy-covered main conveyor is 153 ft. long and rises at an angle of 35 deg. from platform level to the top floor of the warehouse, where the traffic is taken off and placed on stillages for conveyance to the stacking area. An open conveyor is used for the reception of traffic from the warehouse by main conveyor to the berths for loading on to road vehicles. This part can also be used as an auxiliary to convey traffic from platform to warehouse.

Method of Operation

When wagons are placed at the platform, one end of the small conveyor is lowered into the wagon and the other end on to the main conveyor. The traffic is placed on this conveyor and without further handling arrives at the top floor of the warehouse. When traffic is required for delivery, the cases or cartons are brought from the stacks by stillage, placed on the conveyor working in the reverse direction and delivered alongside the road vehicle or railway wagon as required.

Two-way Telephone

A two-way telephone has been provided between the loading bay and the warehouse to ensure continuity in the speed of operations, and improved lighting completes a scheme designed to provide more efficient service.



Covered conveyor system at High Street Goods Depot, Glasgow, Scottish Region, to carry traffic from wagons to upper floors of warehouse

The track speed of the conveyors is 50 ft. per min. and the installation will, in due course, handle 200 tons per 8-hr. shift.

Side Operating Fork Lift Trucks at Swindon Works

A development of the conventional fork lift truck is the side operating fork lift carrier. A machine of this type, the Irion LG 3031 D, which combines the lifting operation of the conventional truck with the ability to carry long material without the assistance of a groundsman, is being employed by British Railways, Western Region, at Swindon Carriage & Wagon Works.

The side operating carrier is designed for the stacking and transporting of long materials which would require a wide aisle were they moved with the usual fork lift truck; its value for handling solebars and long timbers is claimed by the manufacturer to be well demonstrated in its employment in the works.

The accompanying illustrations show the machine at the Works, handling rolled steel sections, of which the longest is 63 ft. 7 in., for chassis of diesel railcars in the course of construction.

TURNER & NEWALL PREFERENCE DIVIDEND.—The directors of Turner & Newall Limited have declared a half-yearly dividend on the 7 per cent cumulative preference stock to September 30, 1957, payable on December 14. The preference stock transfer books will be closed from November 25 to December 7, both days inclusive.

Irion—side operating fork lift truck stacking rolled steel sections at Swindon Carriage & Wagon Works

Unloading sections, which can be up to 63 ft. 7 in. long, to be used for diesel railcar chassis construction

New Signalling Cable in London Midland Region

Crompton Parkinson Limited has supplied R/N/N multi-core signalling cable for a multi-aspect colour light signalling installation on the Crewe-Manchester line, London Midland Region, British Railways.

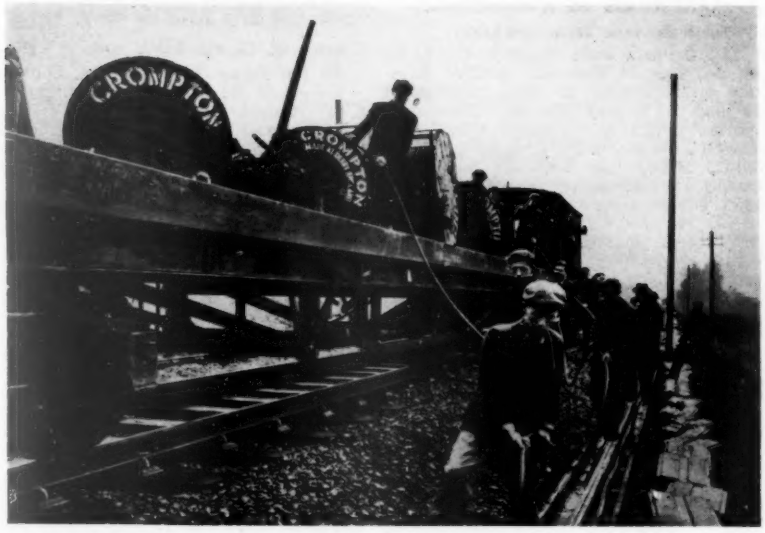
The B.T.C. has satisfactorily conducted a number of trial installations with this type of cable, and the latest installation, on the nine-mile stretch between Wilmslow and Slade Lane Junction, provides the first instance of this cable being used in association with the 25-kV. overhead electrification programme.

Each core consists of a 1/·036 copper conductor, vulcanised rubber insulation (660 V. grade) polychloroprene sheathed and numbered taped. The appropriate number of cores, varying in this installation by four to 37 cores, are laid up with rubber fillings in the inner interstices, and a polychloroprene sheath is provided overall.

Compared with the cable customarily used for railway signalling work, multi-core, paper-insulated and lead alloy sheathed type, the new R/N/N cable has the advantages of minimising the task and the expense of jointing. The 660-V. grade insulation is required for protection against the possibility of induced voltages under fault conditions in the traction circuit.

The installation of the signalling cables and associated power cables between Wilmslow and Slade Lane Junction has recently been completed, the cables being run off from drums on a train of bolster wagons and laid direct in concrete ducts positioned in the cess.

Under normal conditions, the signals will be operated automatically, with the entry and exit of the section controlled from signalboxes at Wilmslow and Slade Lane Junction. Other existing manned signalboxes at Styal, East Didsbury, Mauldeth Road, and Heald Green are to be replaced by ground frames which will enable shunting to be carried out at these points, when required, with overall control from the box at the appropriate end of the section.



Laying R/N/N multi-core signalling cables in concrete ducts on the Crewe-Manchester line, London Midland Region

Increasing Capacity of the Gotthard Line

With the increasing number of the new "Ae 6/6" type 6,000-h.p. electric locomotives first introduced by the Swiss Federal Railways in 1953 for working the heavily-graded Gotthard main line, the management is considering the possibility of reducing the number of independent train movements, and thereby increasing line capacity by operating much heavier freight trains over the mountain section than hitherto.

These locomotives are rated as capable of working loads of 600 *tonnes* at an average speed up to 46 m.p.h. up the continuous 1 in 38½-40 gradients leading to the Gotthard tunnel, and 95 per cent. of the passenger trains now working over the route now fall within this limit; the few heavier workings are entrusted to the three powerful twin-unit series "Ae 8/14" locomotives with the 1-Bo-Bo-1+1-Bo-Bo-1 wheel arrangement, rated at 7,500, 8,800, and 11,400 h.p. respectively. On the flatter sections of the main line, with gradients no steeper than 1 in 83-100, however, the "Ae 6/6" locomotive can handle freight trains of up to 1,600 *tonnes* weight at 75 km.p.h. average.

It is now proposed to work block 1,600-*tonne* freight trains through between Basle and the Italian frontier at Chiasso without their being divided up, as hitherto, into lighter loads at Erstfeld.

To enable an average speed of 43 m.p.h. to be maintained over the mountain section, it will be necessary to use two locomotives of the "Ae 6/6" type and one of the "Ae 4/6" type, with a total weight of all but 350 *tonnes* and an aggregate h.p. of 17,500, disposing the second and third locomotives at different points in the middle of the trains to avoid excessive strains on the drawgear. Such trains, when in motion on the up gradients, will be drawing approximately 15,000 kW. from the overhead conductors, which carry 15,000 V. d.c.

In the first year of its opening the Gotthard route carried a total of 800,000 *tonnes* of merchandise; by 1955 the total had risen to 18,000,000 *tonnes*. Even from 1938 to 1954 the daily number of freight trains had increased from 67 to 125, and on the days of heaviest traffic up to 170 trains of all descriptions have passed through the Gotthard tunnel in the 24 hr. period.

On normal working days 20,000 to 46,000 tons of minerals, merchandise and perishables are conveyed over the Gotthard line. The total traffic passing has increased by 70 per cent since 1938, and by the new methods of working now proposed it is hoped to increase the line capacity by at least 30 per cent.

Improved Churchbury Loop Junction

Work in progress on new junction between the Cambridge main line and the Churchbury Loop at Cheshunt, Eastern Region. The new alignment can be seen beyond the severed end of the up line

Questions in Parliament

Collision Between Train and Lorry

Mr. Graham Page (Crosby—C.) asked the Minister of Transport & Civil Aviation on November 25 when he intended to hold an inquiry into the collision on November 5, 1957, between a Manchester-Euston train and a lorry; and whether he would arrange for such an inquiry to extend to ascertaining the cause of the lorry being on the railway line.

Mr. Harold Watkinson, in a written reply: I am investigating the cause of this collision, which appears to have been the result of a road accident. I do not propose to hold a formal inquiry.

Isle of Wight Service

Mr. John Howard (Test, Southampton —C.) asked the Minister of Transport & Civil Aviation on November 27 if he would take action to alleviate the delay at Portsmouth and Ryde Pier, to which passengers to the Isle of Wight were subject during the summer months, by urging the general public to make greater use of the Southampton route, as suggested at a conference held in Ryde on November 15, 1957, and attended by representatives of the Isle of Wight County Council, businessmen's and hoteliers' associations, the B.T.C., Red Funnel Steamers, and other transport users.

Mr. Harold Watkinson, in a written reply: This is a matter for the transport operators to consider with the interests concerned. I am informed by the B.T.C. that it is prepared to consider sympathetically what it for its part can do to provide additional rail services to feed the Southampton-Cowes route.

Perishables by Rail

Mr. H. Hughes (Aberdeen, N.—Lab.) asked the Minister of Transport & Civil Aviation on November 27 if he was aware that the defects in the carriage of perishable commodities by train, notably fish, from Aberdeen to London, which on July 3 last were being rectified by fitting 200 fish vans with roller bearings, had still not been rectified, and that for the 10 months ended October 31, 1957, the number of fish vans which had to be removed in transit was greater than in the corresponding period of 1956; and what steps he was taking to remedy the loss thus caused to the industry and consumers by fitting the fish vans with roller bearings and otherwise to ensure the regular and prompt delivery of fish from Aberdeen to London.

Mr. G. R. H. Nugent, Parliamentary Secretary, in a written reply: I understand from the B.T.C. that it now has a good supply of the new wheel sets, and by the end of this month will be converting the fish vans to which I referred on July 3 at the rate of 30 a week. The converted vans will go back into service immediately they have been dealt with, and delays arising from hot axleboxes should be progressively eliminated.

Railway Working Conditions

Mr. W. T. Proctor (Eccles—Lab.) asked the Minister of Transport & Civil Aviation on November 27 if he would give a general direction to the B.T.C. to implement the Gowers Report and provide for the safety and welfare of the railway workers along the lines indicated in the Report.

Mr. G. R. H. Nugent, Parliamentary Secretary, in a written reply: No. The B.T.C. is already making considerable progress in the improvement of working conditions on the railways. A direction would not help it to do more.

Closing of Branch Lines

Sir Ian Fraser (Morecambe & Lonsdale —C.) asked the Minister of Transport & Civil Aviation on November 27 if he would initiate legislation making compulsory the holding of a public inquiry before the closing down of any branch railway line.

Mr. G. R. H. Nugent, Parliamentary Secretary, in a written reply: No, Sir.

Railways in South African Protectorates

Mr. Fenner Brockway (Eton & Slough —Lab.) asked the Under-Secretary of State for Commonwealth Relations on November 28 what transport facilities exist in Swaziland and Basutoland by rail and road, respectively; under what auspices such facilities are organised; and the number of citizens of the Union of South Africa who are employed in transport in each of the territories, respectively.

Mr. C. M. Alport: In Swaziland there are no railways. About 30 transport vehicles are operated by the South African Railways Road Motor Services. Twenty-three other bus services and numerous goods vehicles are operated by local residents. Ninety Europeans, of whom the majority are citizens of the Union of South Africa, are employed on the South African Railways Road Motor Services.

In Basutoland there is one mile of railway, operated by the South African Railways, from the border to Maserus Station: 159 transport vehicles are operated by local residents, 14 by South African Railways Road Motor Services and 17 by residents in the Union of South Africa.

About 30 citizens of the Union are employed in transport.

Mr. Brockway asked whether this indicated a very grave absence of railway communications and if the very grave concern of the peoples of Swaziland and Basutoland at the degree of control which the South African Union was gaining both over buses and the proposed extension of railways to Swaziland was realised?

Mr. Alport stated that the Government was in the process of spending £1,200,000 on road improvements in Swaziland and £170,000 on road improvements in Basutoland. So far as the railway position in Swaziland was concerned, he drew attention to the Report produced by Sir Arthur Griffin recently with regard to potentialities in Swaziland, which was still being studied by his Department.

Staff and Labour Matters

T.S.S.A. Wage Claim

A meeting took place on November 29 of the Railway Staff Joint Council, comprising representatives of the B.T.C. and of the T.S.S.A., N.U.R. and A.S.L.E.F., at which the representatives of the T.S.S.A. submitted a claim for improved rates of pay for railway salaried staff with the object, at this time being, of maintaining the purchasing power of salaries.

The Commission representatives stated that a considered reply to the T.S.S.A. submission would be given as soon as possible, and it is likely that the Commission will give a comprehensive reply to the three claims which they have now received from the three railway trade unions.

NEW B.I.C.C. DEPOT OPENED AT BOURNEMOUTH.—British Insulated Callender's Cables Limited has opened a new depot at 511, Roumelia Lane, Boscombe, Hants (tel. Boscombe 36223). The stocks to be held will include a comprehensive range of wiring types of cables and accessories.

Vernacular Press Advertising in East Africa

At the recent Royal Agricultural Show at Nairobi the East African Railways displayed current advertisements in the vernacular Press designed to inform Africans how to make best use of the railways (see our August 30 issue)

Contracts and Tenders

£1,000,000 *contract placed for Sheppey bridge*

John Howard & Co. Ltd., of London, civil engineers, has been awarded a contract to the value of some £1,000,000 by the Kent County Council for the construction of a steel vertical lifting bridge for road and rail traffic over the River Swale at Kingsferry, to connect the Isle of Sheppey with the mainland of Kent. It will be opened early in 1960. The bridge will be 650 ft. long, or nearly half a mile including approach embankments, and will provide headroom for ships of 95 ft. above high water when the central span is raised. When the bridge is opened the adjacent old bridge will be demolished. The Minister of Transport is to make a grant of £724,000 towards the cost of the new bridge; the British Transport Commission will contribute £122,000.

The British Transport Commission has placed a contract with J. Stone & Co. (Deptford) Ltd. for the supply of 30 Stone-Maybach Mekydro twin hydraulic transmissions for 2,000-h.p. diesel-hydraulic locomotives to be built at the Swindon Works of the Western Region. J. Stone & Co. (Deptford) Ltd. have the exclusive manufacturing and selling rights in the United Kingdom for these hydraulic transmissions from Maybach Motorenbau G.m.b.H.

Brissoneau & Lotz S.A. has received orders from the French National Railways for 20 bogie trailer coaches for incorporation in single-phase multi-unit electric trains, and for a further 60 diesel-electric locomotives of Bo-Bo type with M.G.O. engines of 825 b.h.p. This makes a total of 490 of the standard class with Lulzer and M.G.O. engines of 600, 725, and 825 b.h.p. ordered within the last five years from the same builder.

Maschinenbau Kiel A.G. (MaK) has received an order from the Köln-Bonner Eisenbahn for eight 650-b.h.p. 57-ton four-axle standard-gauge diesel-hydraulic locomotives, principally for mineral trains in the brown-coal area.

The Soc. Alsthom has received an order from the Algerian Railways for 10 diesel-electric Co-Co twin-engine locomotives, additional to the eight of this type shipped this year.

Siegener Eisenbahnbedarf A.G. (Seag) has received an order from the Swedish State Railways for five sliding-roof sliding-side wagons of standard gauge, and from the German Reichsbahn (Eastern Germany) for three 20-axle transformer-transport wagons with a carrying capacity up to 240 metric tons on a tare weight of some 110 metric tons. Two extra centre supporting units have also been ordered.

Robert Hyde & Son Ltd., has received an order for 186 Athermos type B axle-boxes for incorporation in the 12 new Co-Co English Electric-Vulcan d.c. electric locomotives for R.E.N.F.E. and to hold as spares for earlier locomotives.

British Railways, Eastern Region, have placed the following contracts:—

W. & C. French Limited, Buckhurst Hill, Essex: manufacture and delivery of precast prestressed concrete deck slabs and precast reinforced concrete beams for extension to Ilford Electric Train Depot

George Simpson & Co. Ltd., Sheffield, 3, Yorks: supply, delivery, and installation of new pipework in connection with renewal of hot water washout mains at Doncaster Carr Motive Power Depot

Herbert Morris Limited, Loughborough, Leicestershire: supply and delivery of one Morris M.120 slewing mobile crane for stores department, Doncaster

Thomas Fletcher & Co. Ltd., Mansfield, Notts: construction of roadway and reconstruction of superstructure and S.W. wing wall of underline bridge No. 30 between Clowne and Barlborough, and Elmton and Creswell.

British Railways, London Midland Region, have placed the following contracts:—

Martin Peyton & Co. Ltd., Shirley, Solihull, Warwicks: renewal of wall glazing and sheeting to south side, melting furnace building, loco. works, Crewe

L. Fairclough Limited, Adlington, Lancs: renewal of bridges No. 1a, 3, 12, 15, 16, 17, 23, 26, 30, 33/7, 33/5, and 33/57-59

Wellerman Bros. Ltd., Sheffield, 3: repair to brickwork at Grindleford end and shafts Nos. 1, 2, 3 and 4, Totley Tunnel between Grindleford and Dore and Totley

Kyle Stewart, Limited, London, N.W.1: accommodation for police department, Euston Station

Marple & Gillott, Limited, Sheffield, 9: removal of redundant track and level crossing gates, Marston branches Nos. 1 and 3 Northwick

Leonard Fairclough Limited, Adlington, Lancs: new roofing over sleeper tippler, Ditton Sleeper Depot

Cellactite & British Uralite Limited, Gravesend, Kent: roof sheeting renewal of roof cover over platforms Nos. 2, 3 and 4 Bolton Trinity Street Passenger Station

A. Monk & Co. Ltd., Radgate, Warrington: improved stores, office accommodation and amenities, carriage depot, Colne.

British Railways, North Eastern Region, have placed the following contracts:—

Chamberlain Industries, Limited, Leyton: one 3-ton non-slewing mobile crane, Chief Mechanical & Electrical Engineer's Department

T. D. Bird & Co. (Hexham) Ltd., Hexham: provision of toilets and salt store, Hexham

Stephenson Developments (Huddersfield) Limited, Huddersfield: prefabricated timber building, York Old Station Buildings

Robinson & Sawdon Limited, Hull: roof repairs, Hull Springhead Motive Power Depot.

British Railways, Southern Region, have placed the following contracts:—

George Wimpey & Co. Ltd., London, W.6: realignment and quadrupling of tracks, Shortlands, Swanley, and new combined stationery store and ancillary works, Salisbury

Taylor Woodrow Construction Limited, Southall, Middx: new carriage cleaning shed, carriage washing plant, footbridge, sidings and ancillary works, Grove Park, and new inspection & repair shed, stores, offices and ancillary buildings for electric rolling stock, Selhurst

Leonard Fairclough Limited, London, N.W.5: reconstruction of Battersea Rise Bridge, Clapham Junction, and reconstruction of York Hill Bridge, West Norwood

Oxley & Bennett Limited, Newhaven, Sussex: new warehouse, Newhaven Harbour

Sydney Antill & Company, London, S.E.13: repairs to viaducts, London Bridge to South Bermondsey

J. Jeffreys & Co. Ltd., London, S.E.1: installation of central heating and hot & cold water services, Angerstein works

W. H. Gaze & Sons Ltd., London, S.W.15: new car park, Clandon

C. & T. Painters Limited, London, N.W.10: cleaning, painting and tarring of bridges, Woking district.

The Swiss Federal Railways has invited designs and bids for 16 three-car single-phase 15-kV. 16⅔-cycle electric trains with all axles motored, for operating Zürich suburban services.

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follows:—

From India:

136 items of relay track including relay line, relay time elements, signal column lights, point detectors and lever locks.

The issuing authority is the Director-General of Supplies & Disposals. The tender No. is SE-4/24831-H/V. Bids should be sent to the Director-General of Supplies & Disposals, Shahjahan Road, New Delhi. The closing date is December 31, 1957. The Board of Trade reference is ESB/27836/57.

From South Africa:

Tenders are invited for a large quantity of superheater flue, boiler, and solid drawn steel tubes to various drawings and specifications.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. H.6521: Superheater Flue, Boiler and Solid Drawn Steel Tubes" should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is January 10, 1958. The Board of Trade reference is ESB/28349/57.

60,000 pairs ribbed fishplates to suit 96 lb. S.A.R. rails, drawing type E.3114

15,000 flat fishplates to suit 96 lb. S.A.R. rails, round holes, drawing type E.358/7

15,000 pairs 100 per cent enlarged fishplates to suit 81 lb. S.A.R. rails, drawing type E46/8

45,000 pairs 100 per cent enlarged fishplates to suit 61 lb. S.A.R. rails, drawing type E.192/6

10,000 pairs 100 per cent enlarged fishplates, 4 in. centres, to suit 60 lb.

B.S.S. rails, drawing type E.164/6
20,000 pairs 100 per cent enlarged fishplates, 3½ in. centres, to suit 60 lb. B.S.S. rails, drawing type E.163/5
10,000 pairs 100 per cent enlarged fishplates to suit 60 lb. CGR rails.

The issuing authority is the Stores Department, South African Railways. Bids, in sealed envelopes, endorsed "Tender No. A6890: Fishplates for S.A.R. Rails," should be addressed to:—The Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is December 20, 1957. The Board of Trade reference is ESB/28348/57.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

The Special Register Information Service, Export Services Branch, Board of Trade, reports that the call for tenders for 106 diesel-hydraulic locomotives for India reported on page 376 of our September 27 issue, has been withdrawn, and a revised tender will be issued in due course.

Notes and News

Argentine Railway Loan Refused.—The Export-Import Bank of the U.S.A. has refused a request from the Argentine National Bank for a loan of $60 million for railway equipment. The President of the Argentine bank, Dr. Carlos Coll Benegas, is reported to have stated that the Export-Import Bank was unable to make a decision because of its own internal problems.

Autobritn Plan Developments.—A further 100 new motorcars are being put into service to cope with increased business arising from the Autobritn Plan. This is the outcome of co-operation between British Railways and Victor Britain Limited, whereby a self-drive hire car is arranged to await a passenger arriving by train at any one of 34 principal stations. The order can be placed at the time of taking a ticket at any of 200 station booking offices. A new extension of Autobritn Plan facilities is that a car can be picked up at one station and handed back at another. Also, by giving 24 hr. notice, any train can be met at a station other than one of the 34 listed for the "on demand" service.

"Haul for the Shore."—The Southern Railway Dramatic Society on December 2 presented Jean McConnell's comedy "Haul for the Shore" at the Scala Theatre,W.1. An excellent all-round performance was given by a cast which included Eileen Cawley (Sarah Trowt), Brian Davies (Jem Burden), Antony Prior (Richard Pengelly), Peggy Pearce (Polly Ippleden), Raymond Cloud (the Vicar) and Ronald Varney (Petrock Pook). The enthusiasm of this well-known society is not confined to the actors and actresses but extends throughout all the organising staff and backstage technicians, all of whom shared in the success of the performance.

The Duke of Edinburgh Visits A.C.V. Group Factories.—The Duke of Edinburgh visited the A.C.V. Group factories of A.E.C. Limited and Park Royal Vehicles Limited on November 26. He was received by the Chairman of the group, Lord Brabazon of Tara, who presented to him Directors and officials of A.E.C. Limited. One of the A.E.C. vehicles inspected was the latest double-deck vehicle for London Transport, the "Routemaster," and, after luncheon, the Duke of Edinburgh accompanied by Mr. W. R. Black, Managing Director of the A.C.V. Group, and Sir Wavell Wakefield, Chairman of Park Royal Vehicles Limited, travelled to Park Royal Vehicles' factory in one of these new vehicles.

Railway Service Christian Union Annual Meeting.—The annual meeting of the Railway Service Christian Union was held on November 26 at the British Transport Commission Headquarters, Marylebone, London. Mr. J. Taylor Thompson, Chief Civil Engineer, London Midland Region, President of the Union, took the chair. Some 120 members and friends were present. Mr. Cecil J. Allen, Past President, gave a talk, illustrated by slides, on some railways in Switzerland.

B.F.I. Transport Films—The British Film Institute has compiled and added to its library two reels of early transport scenes. One is devoted to railway subjects, which range from French and German views taken in 1895 (the pioneer year of cinematography) to brief shots of special trains hauled by London & South Western Railway 4-4-0 locomotives in about 1900. Contemporary additions to the B.F.I. library include films of the Majorca electric railway and an impression (in colour and sound) of the history and development of the Third Avenue elevated railway in New York City; other railway items are in production. Films from the Institute library are available at 24, Denmark Street, London, W.C.2, for sale or hire to individuals and societies for private exhibition.

Export Competition.—In an address to the Secretaries Club, organised by the Secretaries of National Trade Associations, on November 29, Mr. Leslie Gamage, Chairman, the General Electric Co. Ltd., and President of the Institute of Export, declared that if Britain was associated with the European Free Trade Area, manufacturers would have equal opportunities with Germany in Europe, and in the rest of the world. If Britain did not enter, then Germany not only had the advantages of its goods entering European markets duty free while British goods remained subject to duty, but would have expanded the boundaries of its home market threefold and provide a much higher base load for its industries to compete with those of Britain in the world markets, including the Commonwealth.

Eastern Area Board Visit to Eastern Region Installations.—Sir Reginald Wilson, Chairman, accompanied by Members of the Eastern Area Board, visited Retford, Gainsborough, Barnetby, Scunthorpe, Lincoln, Newark, and Grantham during a recent tour of the Eastern Region. The Board inspected railway installations and met representatives of the staff at Retford, Gainsborough, Barnetby, and Scunthorpe on November 19 and, on the same date, met civic officials at Lincoln, also representatives of commercial and industrial undertakings in the Lincoln and Scunthorpe areas. Next day, the party inspected installations and met representatives of the staff at Lincoln, Newark, and Grantham.

Two Hundredth F.B.I. Student in the U.K.—The two hundredth overseas engineer to arrive in Britain under the Federation of British Industries overseas scholarship scheme was welcomed by Mr. W. P. N. Edward, Director of Home Services & Information, in the absence of Sir Norman Kipping, the Director General, at the F.B.I. headquarters on Novem-

Diesel Training in the Eastern Region

Instructor and main-line diesel trainee-drivers at Stratford Motive Power Depot inspecting the first Brush 1,250-h.p. diesel-electric locomotive to be delivered to the Region (see last week's issue)

ber 29. He is Mr. L. A. Murphy, who qualified in mechanical engineering at the University of Melbourne in 1949, and is now employed as assistant engineer in the rolling stock branch of the Victorian Railways. Mr. Murphy is taking up a one-year scholarship, and will spend the first six months with the Metropolitan-Cammell Carriage & Wagon Co. Ltd., Birmingham, studying production engineering as applied to the manufacture of railway rolling stock. Arrangements are being made for his programme of training during the second six months.

Christmas Trees at Railway Stations.—During the Christmas period certain stations in the North Eastern Region of British Railways will display decorated and illuminated Christmas trees. At York, Hull, and Newcastle the trees will be linked with charitable appeals organised by railway staff. Trees decorated by railway staff will be installed for purely decorative purposes at Bradford Exchange, Bradford Forster Square, Halifax, Huddersfield, Wakefield Westgate, and Wakefield Kirkgate. At Sunderland, Harrogate, Leeds City, Leeds Central, Beverley, and Withernsea Christmas trees are being provided by local organisations on behalf of various charities.

"Deltic" Locomotive Hauls Canadian Trade Mission Train.—The most powerful diesel-electric locomotive in the world, the 3,300-h.p. "Deltic," built by the English Electric Co. Ltd., left Glasgow Central at 12.1 a.m. on December 4 for Manchester Exchange, drawing the special Canadian Trade Mission train. In this way the locomotive was effectively demonstrated to the 50 members of the mission.

Canadian Trade Mission Tour.—The strongest trade mission ever received in Britain, consisting of more than 50 senior representatives of Canadian organisations normally concerned with large-scale importing into Canada, left Paddington in a special train on November 26 for a 1,129-mile tour of industrial centres in the United Kingdom. As stated in the editorial note in our November 29 issue, its members, in a tour of 11 days, are using a train which British Railways had assembled to provide the maximum comfort for these guests. Leaving Paddington the train was of seven coaches, but seven sleeping cars, giving individual bedrooms to each person, have been added during the trip, as the members of the Mission are spending three nights on the train. Special tickets have been provided by British Railways for the tour. They are printed on gilt-edged cards incorporating the Maple Leaf and the British Railways crest. As they are being kept as souvenirs of the trip they are not being "nipped," nor will they be collected at the end of the journey. A special route map has been prepared by British Railways so that the passengers may follow the course the rail tour will take. The train called at Didcot, Filton Junction, Cardiff General, Margam, Coventry, Birmingham New Street, Sellafield, Edinburgh Princes Street, Glasgow Central, and Manchester Exchange. On December 7 it will leave Leeds City at 12.5 a.m. and arrive at Marylebone, London, at 5.58 a.m.

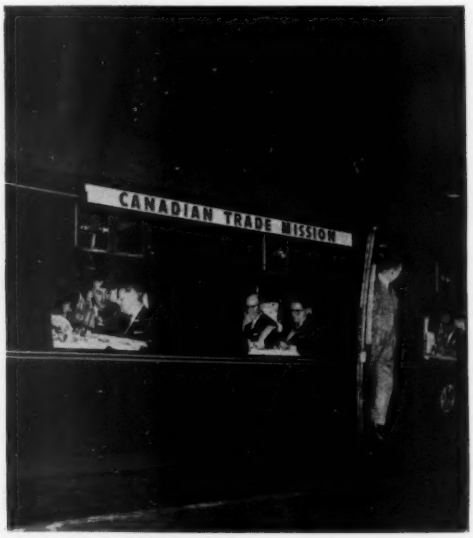
French Railway Charges Increase.—French National Railways passenger fares are to be increased from January 1 by 15 per cent first class and by 9 per cent second class. Freight charges will be augmented by 10 per cent. The amount of the increase in Paris Metro fares has not yet been determined, but it is stated that it is likely to be 20 per cent.

Professional Approach to Transport.—The suggestion that the chief hope of diagnosing transport problems fairly, and of suggesting workable solutions, must lie in seeking to adopt the widest professional approach and in eschewing indifference and laissez-faire on the one hand, and party politics and sectional interest on the other, was made by Sir Reginald Wilson, President of the Institute of Transport, in an after-dinner speech to the Humberside Section of the Institute on December 2. The Institute, he stated, was an organisation with 9,500 members drawn from all branches of transport, non-political and non-sectional, and did not seek the material benefit of its members but rather was dedicated to furthering the truth about transport, both as a science and as an art. Accordingly the Institute, and each of its members, had a considerable responsibility for promoting the proper approach to transport questions. The professional approach must rest on a trained and educated mind and on a sufficient equipment of factual knowledge, and the examinations of the Institute were intended to ensure this. He emphasised the great possibilities which lay ahead of transport men because of the great advances which had taken place in science and technology.

Dearer Platform Tickets.—The price of platform tickets at British Railways and London Transport stations is to be raised from 1d. to 2d. early next year, after the vending machines have been adapted. This is one of the increases in miscellaneous charges foreshadowed in an announcement by the British Transport Commission last August. Certain charges, such as those for seat reservations and sleeping berths, already have been raised. London Transport sells some 600,000 platform tickets a year, many of them at Earls Court, where the station premises are used as a short cut to neighbouring streets.

London Tube Train Movement with Open Door.—When a woman passenger appeared at Marlborough Street Court recently in answer to a summons alleging that she had broken a by-law by attempting to enter a carriage after the doors had begun to close, it was stated that she put her right arm with bags and an umbrella through the door as it closed. The train started to move, one handbag fell to the floor of the carriage and the other stuck in the doors. A stationwoman pulled the passenger clear, but not until she had been pulled along for some yards and was within half a car-length of the tunnel mouth. It was stated for the London Transport Executive that the doors of a tube train did not have to be completely closed before it could start, as there is a tolerance of 1½ in., enough to enable a train to start with a passenger's wrist caught in the door. The summons was dismissed.

Special train for the Canadian Trade Mission at Cardiff General, Western Region, with headboard and flag decorations



One of the special name boards fitted to a coach of the train

Forthcoming Meetings

December 11 (*Wed.*).—British Railways (Southern Region) Lecture & Debating Society, at the Chapter House, St. Thomas' Street, S.E.1, at 6 p.m. Paper on "Touring on Russian railways," illustrated by lantern slides, by Mr. J. H. Price, Editor, Thomas Cook's Continental Timetables.

December 11 (*Wed.*).—Institution of Railway Signal Engineers, York Section, at the Signalling School, Toft Green, York, at 5.30 p.m. Paper on "A.T.C.—design, installation and maintenance of the latest equipment," by Mr. J. H. Currey (B.T.C.).

December 11 (*Wed.*).—Railway Correspondence & Travel Society, Lancs & North-West Branch, at All Saints' Rectory, Droylsden Road, Newton Heath, Manchester, 10, at 7 p.m. Paper on "Footplate experiences," by Mr. J. B. C. McCann.

December 12 (*Thu.*).—British Railways (Western Region) London Lecture & Debating Society, in the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Paper on "A visit to the U.S.A.," illustrated with lantern slides, by Mr. J. R. Hammond.

December 12 (*Thu.*).—Institute of Transport, East Midlands Section, at the City Transport Recreation Club, Leicester, at 1 p.m. Paper on "The study of transport history," by Professor J. Simmons.

December 13 (*Fri.*).—Institute of Transport, education discussion meeting, at 80, Portland Place, London, W.1, at 6.30 p.m. "The value of day release classes for transport staffs." Opener: Dr. W. S. Barry, Training & Education Officer, British European Airways.

December 13 (*Fri.*).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, N.W.1, at 7.15 p.m. Paper on "The human element—an account of some railway accidents," by Mr. A. S. Parker.

December 13 (*Fri.*).—Institution of Mechanical Engineers, at 1, Birdcage Walk, Westminster, S.W.1, at 6 p.m. James Clayton lecture on "High pressure hydraulic transmission," by Dr. Ing. Hans Thoma.

December 13 (*Fri.*).—Institute of Transport, Northern Section, at the Royal Station Hotel, Newcastle-upon-Tyne, at 7 p.m. Paper on "The history and work of the Railway Inspectorate, Ministry of Transport & Civil Aviation," by Brigadier C. A. Langley.

December 14 (*Sat.*).—Railway Students' Association. Visit to Eastleigh, Southern Region. Leave Waterloo at 8.30 a.m.

Railway Stock Market

Sentiment in stock markets was helped by the marked rise in the sterling area gold and dollar reserves which in recent weeks has been accelerated by the strength of the £. This last factor, and the high money rates since the bank rate rise to 7 per cent, have brought a big increase of foreign balances in London. The City is resigned to the view that no reduction in the bank rate is probable until the first quarter of next year, and for the time being the trend of markets will probably continue to be governed in the main by that on Wall Street. It seems that new issues will for some while attract the bulk of money seeking investment. Advisers on new issues, however, may well be uncertain whether to postpone issues until after the Budget, for by then the bank rate might be down to 6 per cent; if hopes are realised, there might be important tax reductions designed to help industry.

Among foreign rails, Antofagasta ordinary has declined further from 22½ a week ago to 26½xd, but the 5 per cent preference stock improved from 36 to 37 and the 5 per cent (Bolivia) debentures moved up to 93½.

Mexican Central "A" debentures rose further from 69 to 70½. United of Havana stocks rallied from the lower prices made recently, the second income stock being 7, compared with 6¼ a week ago, though the consolidated stock remained at 2. San Paulo Railway 3s. units eased slightly to 2s. 1½d. Peru Transport "B" shares have kept at their par value of $1.

International of Central America shares were at $18¼ with the preferred stock again $127, but they remained firmly held and quotations did not appear to be tested by dealings.

Chilean Northern 5 per cent debentures kept at 37½, Costa Rica ordinary stock at 16½ and the 6½ per cent first debentures at 74, while Guayaquil & Quito non-assented stock was 95. Taltal shares have been dealt in around 15s. 6d.

Canadian Pacifics at $47¾ moved fractionally lower as compared with a week ago, while the preference stock at £56¾ was the same as last week, but the 4 per cent debentures improved from £62¼ to £63½. Nyasaland Railways shares were again 9s. 6d.

The shares of locomotive builders and engineers were inclined to strengthen, with Beyer Peacock 5s. shares 8s. 3d. compared with 8s. a week ago. Westinghouse Brake held their improvement to 32s. and Charles Roberts 5s. shares remained at 8s. 3d., at which there is a yield of over 8¼ per cent on the basis of last year's 15 per cent dividend. Ransomes and Marles 5s. shares kept steady at 10s. and British Timken at 51s. 3d. held last week's rise. Ruston & Hornsby have been firmer at 23s. 6d. and T. W. Ward steady at 70s. Gloucester Wagon 10s. shares were 14s. and Wagon Repairs 5s. shares, 12s. 6d. Birmingham Wagon have strengthened from 14s. 10½d. to 15s. 1½d.

Elsewhere, after last week's rise, North British Locomotive encountered profit taking and came back from 14s. 3d. to 13s. 6d., while Hurst Nelson receded from 27s. to 25s. G. D. Peters were again quoted at 26s. 3d. Dowty Group 10s. shares improved further from 31s. 3d. to 31s. 9d. and Pressed Steel 5s. shares were more active around 14s. 1½d., while Tube Investments at 55s. 3d. have more than held last week's rally.

Associated Electrical were 50s. 3d. compared with 50s. 9d.; English Electric 50s. 9d. compared with 50s. 6d.; and General Electric at 40s. 3d. compared with 40s. 4½d. a week ago. Crompton Parkinson 5s. shares held steady at 15s. 9d. having remained under the influence of the chairman's annual statement.

Steel shares have been active, but did not hold best prices despite hopes that the pending dividend announcements may show a number of increases. Elsewhere, Babcock & Wilcox were firmer at 61s. 3d. F. Perkins 10s. shares have declined to 10s. 1½d. on the loss reported for the first nine months of the year. The company expects profits to be earned next year, however, and is planning to extend its interests.

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